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FLIGHT
and Aircraft Engineer

FIRST AERONAUTICAL WEEKLY IN THE WORLD: FOUNDED 1909

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How Far Have We Come?

THE two or three of us remaining on *Flight* who knew our founder-editor Stanley Spooner are wondering what the old gentleman would think if he were with us now, on our journal's fiftieth birthday. About flying, that is, and about *Flight*. He was never a technical man, but he knew where the paper was going when he wrote in his first leader, "The flying world is about to grow up; we are preparing to grow up with it . . ." How, then, has his "flying world" progressed?

Beyond question, the state of the technical art (we have reservations concerning its applications) transcends anything that the savants of Mr. Spooner's time could have imagined. Our first "news par." recorded that "Wilbur Wright . . . made forty-five circuits . . . equivalent to 99 kiloms . . . In addition he flew 400 metres to and from his starting rail, thereby bringing the distance to 99.8 kiloms, which constitutes the world's record . . ." Today the records for speed, height and non-refuelled distance are 1,404 m.p.h., 91,249ft, and 11,235 miles—performances by more or less standard machines. Research aircraft have exceeded 1,500 m.p.h. and 120,000ft, and within months we should be able to mark up 3,600 m.p.h. and 100 miles.

Alongside hypersonic manned weapon systems we see missiles in bewildering profusion. On the one hand are the ICBMs, weighing over a hundred tons; already these have demonstrated their ability to place their awesome loads on targets more than 6,300 miles distant. The IRBMs throw a megaton warhead over 1,700 miles; and then follow a host of weapons down to portable anti-tank missiles that a soldier can tuck under his arm.

A New Realm

Outcropping from the ballistic-missile field are the space probes. "A new realm of flight" was the title under which we recorded the news of the launching of the world's first man-made satellite some 15 months ago; and nowhere has there been more astounding progress than in astronautics. In this issue we report the orbiting of a satellite the size of an airliner fuselage, capable of receiving and re-transmitting radio messages from Earth. A rocket has reached as far as one-third the distance to the Moon, and a squirrel-monkey's cage has survived re-entry from 300 miles.

In 1909 there was little thought of air commerce; only since the '20s have the airways begun to girdle the world. But, so used have the airlines become to an effervescent rate of growth that last year's increase—expected to be between five and ten per cent—created dismay. The most remarkable growth is seen over the North Atlantic where sharply reduced fares and rates have swelled passenger and freight traffic by a quarter and a fifth respectively. Today more passengers prefer to fly the Atlantic than to travel by sea. We have witnessed the arrival of the jet age—a revolution which promises to attract unprecedented numbers of new travellers into the air—and if slower types are permitted to offer lower fares, traffic volume could be further multiplied.

Many people have worked hard and courageously for what we have recorded above, and greater good will yet come of their efforts. Not the least contribution will be that of the British aircraft industry. As for *Flight*, if our old chief could have read the message that we are honoured to print overleaf his eyes would have twinkled as they had never twinkled before.

LIBRARY
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FROM H.R.H. PRINCE PHILIP, DUKE OF EDINBURGH

K.G., P.C., K.T., G.M.B.E., F.R.S.

I send my congratulations to "Flight" on their fiftieth year of publication. This, the oldest aviation weekly in the world, has seen and reported almost the entire growth of aviation. It seems incredible to think that this age of giant jets, rockets and satellites only started a little over fifty years ago with man's first rudimentary attempts to fly. The growth has been remarkable, yet I am convinced that "Flight" will have things just as remarkable to report in the next fifty years.

FROM ALL QUARTERS

Earning £3m Weekly

SALES abroad by the British aircraft industry during the first eleven months of 1958 amounted to a record figure of £142m. This was some £26m more than for the whole of 1957, which was itself a record year; and the total represents about £3m a week or an annual figure of some £155m.

Exports during November last year, at £15,346,438, were noteworthy in two respects. This was the second highest monthly total ever; and a record contribution was made to it by aero-engine sales, which at £5,188,087 were nearly £700,000 higher than the previous best figure recorded (in May 1958). The other figures for November were £9,601,045 for aircraft and parts; £284,783 (electrical equipment); £189,426 (instruments); and £83,097 (tyres). Brazil was Britain's best customer, spending £1,591,569 on aircraft and parts; and next in order were South Africa (£1,343,641) and India (£1,237,246).

The January-November total, £142,176,592, showed an increase of 43 per cent over the equivalent period for 1957 and a gain of 22 per cent over the twelve-month total.

Atlas in Orbit

THE successful launching into satellite orbit of an Atlas intercontinental ballistic missile with radio payload, and the reception and transmission of voice messages between the satellite and Earth, were achieved by the U.S. Air Force during the week before Christmas. The firing took place at Cape Canaveral on December 18, and the first voice transmission from the vehicle to be received on Earth was a pre-recorded message from the President of the United States conveying "America's wish for peace on Earth and goodwill towards men everywhere."

The complete Atlas achieved orbit and, as such, was by far the largest satellite to be successfully launched by the United States. According to the U.S. Defense Department, "This marks the first time that a high-accuracy missile guidance system has been used to steer such a vehicle into its orbital trajectory." The launching was designated Project Score (Signal Communications Orbit Relay Experiment).

An official statement gave the following data for the satellite: velocity at burn-out, 17,100 m.p.h.; thrust at sea level, approximately 359,000 lb; powered flight-time, 4½ min; perigee, 118 miles; apogee, 625 miles; maximum latitude, 32 deg N. and S.; expected orbital life, 20 days; weight of body in orbit, approximately 8,800 lb; and weight at launch, approximately 244,000 lb. The satellite weight of 8,800 lb was regarded as an incredibly low figure for a missile 85ft long and 10ft in diameter.

The first voice transmission from the satellite, the pre-recorded message by President Eisenhower, was received on December 19. The following day this message was transmitted in teleprinter code from Corona, California, and was received by the satellite, re-transmitted and received by stations in Texas, Arizona and Georgia. Later, other voice and teletype messages were received, recorded and re-transmitted by the satellite.

Hawker Siddeley Plans

NEWS of great Hawker Siddeley developments was divulged by the Group's managing director, Sir Roy Dobson, at a meeting of financial correspondents on December 19 called to discuss the Group's annual statement of accounts. Sir Roy stated that a close-support fighter is under development at the Kingston-upon-Thames headquarters of Hawker Aircraft Ltd. A team led by Sir Sydney Camm has planned a vehicle of unconventional type, capable of doing "all that the Hunter can do" yet having the ability of taking off and landing vertically. Power will be provided by a special Bristol engine, towards the development of which "financial support" may be provided by the United States Government.

An unofficial report states that the project bears the Hawker number P.1127 and another report claims that the same engine or engines can be used to provide both lift and forward pro-

pulsion. There is a NATO requirement for an aircraft of this nature.

Sir Roy also disclosed that the Group have under development a new type of aircraft named the Aerocar. A project by Avro Aircraft, the Aerocar is a small utility vehicle, probably with hovering ability, which Sir Roy describes as "one of the most promising new developments we have today."

In the Group's statement of accounts, the net profit for the year after taxation is shown as £5,118,601. Of this, £1,652,803 is required for payment of dividends and £3,465,798 has been retained in the business.

The statement also disclosed that £75,000 was paid as compensation to Sir Frank Spriggs, who relinquished his appointment as managing director on July 31 last year.

Sea Hawks for India

INDIA is to buy A.W.A. Sea Hawks for her aircraft-carrier *Hercules*. This was stated by the deputy defence minister, Mr. K. Raghuramiah, in New Delhi, on December 18. A Government spokesman said later that no decision had yet been taken on the number to be purchased. The carrier *Hercules* (16,000 tons), which was bought from Britain, is now being refitted.

Progress with the Argosy

THE prototype Armstrong Whitworth AW.650 Argosy was rolled out (photograph below) from the erection hangar at Bitteswell on December 20. Ground running of the four Rolls-Royce Dart 526 engines took place during the ensuing ten days and had been completed by last week-end. During the past week the aircraft has been undergoing a pre-flight inspection; it will then complete its weighing and compass-swinging checks and two days of taxying trials before being taken into the air.

Civil Conway Certificated

THE following text is the first paragraph of a recent announcement by Rolls-Royce Ltd., Derby: "The Air Registration Board of Great Britain has granted a full Certificate of Airworthiness to the Rolls-Royce Conway RCo.10 Mk 505, by-pass turbojet for use in civil aircraft. The RCo.10 has a guaranteed minimum dry thrust of 16,500 lb, but the Certificate of Airworthiness has been granted at a minimum rating of 17,000 lb. This is the highest thrust yet certified for a commercial engine. Application will shortly be made to the A.R.B. for certification of the RCo.12 rating of 17,500 lb guaranteed minimum thrust."

Regulus II Cancelled

FOR some time it has been appreciated that several American weapon programmes are to be eliminated from the 1960 Fiscal Year. The latest to come under the axe is the Regulus II, an air-breathing, cruise-type, submarine-launched missile for the U.S. Navy. A development by Chance Vought Aircraft, Inc., Regulus II had proved outstandingly successful during development but has apparently been overtaken by Polaris and other systems.

Scottish Aviation Prospects

DEVELOPMENTS of the Prestwick Pioneer and Twin Pioneer are being investigated which may mark an upward turn in the fortunes of Scottish Aviation. A more powerful version of the Prestwick Pioneer, with the 530-series Alvis Leonides, flew for the first time over a month ago.

When the company's managing director, Mr. T. D. M. Robertson, met a deputation of staff associations recently he gave a further assurance that there would be no more redundancies and added: "I am confident that the prospects of orders which we are pursuing now will enable us to maintain full employment for the existing labour force." (This is at present 2,892, having dropped from a previous figure of about 3,700.)

Among orders expected is one from Portugal, where the Twin Pioneer was recently demonstrated.

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Making WS-199

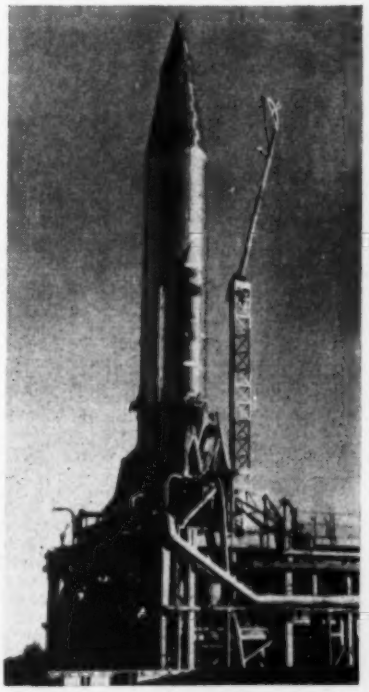
BIDS from manufacturers for the U.S. Air Force air-launched ballistic missile (Weapon System 199) are expected to involve numerous companies, particularly Martin and a Lockheed/Convair combination. The ballistic missile will be stressed for launching from supersonic aircraft, such as the B-58, and will have a range between 1,000 and 2,000 miles. Lockheed's prototype was launched on December 26 from a B-58 travelling at over 1,100 m.p.h.

"The Small World" Afloat?

A REPORT that the transatlantic balloon *The Small World* had made its landfall in Venezuela last Friday was, apparently, the outcome of a hoax. This was discovered after the Venezuelan Government and other authorities had organized a large-scale search of the coastline by fixed-wing aircraft and helicopters. In New York on Sunday, Mr. Peter Elstob, business manager of the expedition, said that he believed the balloon was down in the sea. The last certain radio contact had been ten days earlier.

In an article written for *Flight* a few weeks before the voyage began (the take-off was from the Canary Islands on December 12), Colin Mudie, the balloon's navigator, said:—

"Landing (to use contradictory terminology) will probably be in the sea—in emergency, or through lack of gas, or by plan. The car is designed in boat form with a high-speed planing hull of sea-sledge type which has great directional stability. We plan to slow our speed over the water with drogues as we come down, but in any case there will be warps, trail ropes, emergency food bags and a mast dangling over the back of the car. These will ensure our landing with the hull pointing dead downwind, and the balloon can be released at once by a system of quick-release hooks. Then, with balloon jettisoned, we can rig mast and sail, rudder and leeboard, and sail on."



PROJECT SCORE, the U.S. experiment to launch an Atlas ICBM with communications payload into satellite orbit, was successfully inaugurated on December 18. The Atlas, seen here shortly before the final count-down, weighed 244,000 lb at launch, of which 150 lb was payload

READY TO GO: As outlined in a news-item in Col. 1, the first Armstrong Whitworth Argosy, G-AOZZ, has been rolled-out at Bitteswell and is about to fly. One of the largest civil-aircraft programmes in the world to be sponsored and financed entirely by the manufacturer, the Argosy was fully described in our issue of October 17 last

FROM ALL QUARTERS . . .

Canada's Fifty Years

DURING 1959 the 50th anniversary of powered flight in Canada will be celebrated at a number of special occasions in the Dominion. These will begin on February 23, the anniversary of J. A. D. McCurdy's flight in 1909, when the R.C.A.F. will fly a replica of McCurdy's Silver Dart at Baddeck, Nova Scotia, and commemorative dinners will be held in many cities and towns across Canada.

The badge adopted for Canada's Jubilee year

The principal dinner that night will be held in connection with a special two-day meeting of the Canadian Aeronautical Institute in Montreal, at which the Governor-General of Canada, Mr. Vincent Massey, will be the guest of honour. It is hoped that J. A. D. McCurdy himself will be able to attend both this function and the flight at Baddeck earlier the same day. The Silver Dart will carry a bag of airmail (containing greetings from the Canadian government to other governments) on its flight, and this mail will be taken on to Sydney Airport, Nova Scotia, by helicopter before coming under regular airmail handling. Commemorative stamps and covers for general use will also be issued on the same day, February 23, 1959.

The commemoration stamp

The second main C.A.I. commemorative event will be the Institute's annual general meeting at Keltic Lodge, Ingonish, some 50 miles from Baddeck, on June 15-17. On one of these three days a memorial will be unveiled at Baddeck.

Ryan Vertiplane Progress

FOLLOWING three months of full-scale testing in the large wind-tunnel at Ames Laboratory, the Ryan Vertiplane has been somewhat modified in preparation for its first flight at Moffett Field. Powered by two turboprop-driven propellers mounted on pylons beneath a wing having extensive thrust-deflecting flaps, the machine is designed for investigation of vertical take-off for the U.S. Army. Modifications include the replacement of the sharply tail-down undercarriage by a nosewheel configuration and the addition of a ventral fin and anti-spin parachute.

World Congress Plans

WHEN the European representative for next year's World Congress of Flight, Mr. Gene Murphy, visited London last month he was able to give a clear picture of the purpose and form of the congress (preliminary details of which were given in *Flight* for December 19, p. 932).

Mr. Murphy said that the congress, which was the first major event of its kind in the U.S., had the support of 90 per cent of the country's aircraft industry, and if successful would be held annually or biennially. Its objectives were, chiefly, commerce and national prestige; but he emphasized that if the "world" aspect were successful the U.S. industry would automatically benefit.

Mr. Murphy said the congress—a U.S. "Paris Salon"—was being held at Las Vegas because the city has two airfields and a guided missile range, is building a $15m convention centre which would be finished in March and have congress participants as its first users, can offer 1,500 hotel rooms and has good weather.

The period of the congress is April 12-19.

C-133's 52-ton Load

WHAT was described as "the heaviest load in the history of aviation" was airlifted by a Douglas C-133 of the U.S. Military Air Transport Service at Dover A.F.B., Delaware, on December 16. The aircraft carried 117,900 lb of cargo (more than its own unladen weight of 111,715 lb) to 10,000ft after taking off in 4,500ft at a gross weight of 274,900 lb and climbing at 2,000ft/min. The previous heaviest weight airlifted was 78,089 lb, by a KC-135 of the U.S.A.F. in September 1958. As reported on p. 5, C-133s are being used, together with C-124s, in supplying the build-up of Thor bases for the R.A.F.

A.R.B. Appointment

NOMINATED as a representative of aircraft constructors, Mr. A. A. Rubbra has been appointed a member of the Air Registration Board to fill the vacancy caused by the retirement of Mr. A. G. Elliott.

Mr. Rubbra, technical director of Rolls-Royce Ltd., is a member of the council of the Aircraft Research Association and of the automobile division of the Institution of Mechanical Engineers. He is a Fellow of the R.Ae.S. and serves on the council, technical board and technical executive committee of the S.B.A.C.

Indonesian Gannets: Australian View

COMMENTING recently in Canberra on the sale by Britain of Fairey Gannets to Indonesia, the Australian Minister for External Affairs, Mr. R. G. Casey, said he was fully aware that if these or similar aircraft were not bought from Britain they were likely to be obtained from some other source. Indonesia, like other countries, wanted enough arms to maintain internal law and order and for her defences. Nevertheless, her neighbours were naturally concerned with any arms build-up that might disturb peace in the region; and concern must be heightened when some prominent Indonesians talked of using force in their relations with Holland and New Guinea.

Vautour Century

THE hundredth Sud SO.4050 Vautour has now left the Sud-Aviation factory for delivery to the French Air Force. All-weather fighter, attack and bomber versions are being built and the hundredth machine was of the Mark 2N all-weather type. Bomber and all-weather training are carried out respectively at Tours and Cognac. Squadrons of all-weather fighter and attack-bomber Vautours are serving with the Israeli Air Force.

Other news from Sud-Aviation is that ground-running of their new 3200 three-turbine helicopter should begin shortly, and the first flight may follow during the second quarter of this year. They hope to have the machine flying at the Paris Show in June. Initial production machines are destined for the French forces, but a 28-seat civil version is also projected.

Fiat G.91 Orders

IT has now been announced that the United States is to order 50 Fiat G.91s for use by NATO air forces. Earlier reports intimated that the U.S. would support orders from Italy, France and Germany for three batches—one each—of fifty G.91s, followed by a further 150 machines. Meanwhile, considerable licence-production is to be undertaken by a group of German companies, but little has been heard of firm orders from France. The G.91 will probably be replaced after a few years by an advanced version of the French Bréguet Taon powered by the Bristol Orpheus 12 and some time after that by a tactical aircraft with VTOL or STOL capabilities.

Many of the total of 25 prototype and pre-production G.91s ordered by the Italian Government have now been delivered and a special tactical squadron has for some time been carrying out operational trials. This unit will shortly move to Germany for tactical exercises in conjunction with NATO ground forces.

Top-dressing Argument

CONTROVERSY has arisen in New Zealand over the government's policy of awarding aerial top-dressing contracts by tender. The Aviation Industry Association of New Zealand recently protested that the "cut-throat competition" invited by the tender system led to neglect of maintenance and to pilot fatigue, overloading of aircraft, and flying in marginal weather. Government officials have stressed that their concern is to obtain the best price, on the taxpayer's behalf, and have denied that accidents have resulted from such competition.

The Lands Department is allocating the remainder of this season's top-dressing contracts by negotiation with those operators who successfully tendered for the contracts last time. The Department will observe how this system compares in efficiency and economy with the previous tender method.

FROM ALL QUARTERS . . .

Promoting the Herald

SALES promotion of the Herald is now the responsibility of Mr. R. S. Sowter, who has been appointed sales manager of Handley Page (Reading) Ltd. from January 1. His new department, though part of the Reading company, will function at the Cricklewood headquarters of Handley Page Ltd. At present Mr. Sowter is organizing a series of demonstration tours which a Dart Herald—the second prototype of which flew for the first time on December 17—is to make in various parts of the world from next spring onwards.

Mr. R. S. Sowter

At the beginning of this week G/C. R. C. M. Collard, the Handley Page director with particular responsibility for sales activities, left the U.K. for Australia and New Zealand where he is to have talks relating to the Dart Herald. In Australia he will discuss aircraft re-equipment with the Air Department, with particular reference to the Victor and the Herald; and in New Zealand he is to continue negotiations with N.Z.N.A.C.

Mr. Sowter has been on the Handley Page sales staff for the past four years, concentrating on civil aircraft, and in the field of Herald promotion has acted as right-hand man to G/C. Collard.

Weybridge Changes

FOLLOWING the decision of Vickers-Armstrongs (Aircraft) Ltd. to concentrate aircraft design activities at Weybridge, changes in the design organization there have been announced. As from January 1, Mr. B. E. Stephenson has become director of engineering, having previously been chief engineer (civil aircraft); Mr. H. H. Gardner, formerly chief engineer (military aircraft), takes up the appointment of technical director; and Mr. G. F. H. Hemsley, who was previously assistant chief engineer (aircraft), now becomes chief engineer (aircraft) and has been made a special director of the aircraft company.

Messrs. B. E. Stephenson, H. H. Gardner and G. F. H. Hemsley

Five subsidiary appointments have also been announced, all bearing responsibility to the chief engineer (aircraft). In these posts, Mr. E. S. Allwright, Mr. E. E. Marshall and Mr. D. Parker all have the title of assistant chief engineer (aircraft); Mr. D. James becomes chief structural engineer and Mr. E. J. Clark design manager. These five posts, with the three senior appointments, cover the whole of the company's activities in the field of aircraft design.

For the time being, design work on the Scimitar will be handled by the design team at South Marston, under the direction of Mr. A. N. Clifton, who retains his present position as chief designer (Supermarine) until he takes up an appointment at Weybridge at a later date.

IN BRIEF

The first Britannia 253 long-range trooper/freighter/ambulance aircraft flew at Short's Belfast airfield on December 29. Twenty are being made for R.A.F. Transport Command, 15 by Short and Harland and five assembled by Bristol from Belfast components.

* * *

Following the visit of a West German delegation to the United States, an agreement is to be drafted under which about 300 Lockheed F-104 Starfighters are to be licence-built in West Germany.

* * *

In co-operation with the Sikorsky Division of United Aircraft Corpn., the Komaki plant of Mitsubishi Heavy Industries, at Nagoya, have completed their first helicopter. The plant is licence-building the S-55, and the first two of about forty on order were rolled out on December 16.

* * *

Already behind schedule, the first firing of the Martin XSM-68 Titan ICBM of the U.S. Air Force was unsuccessful. The attempt was made at Cape Canaveral on December 20, and an explosion and fire prevented the missile from leaving its pad.

* * *

A sum of £A775,000 (£620,000) is expected to be required to meet the recent decision of the Royal Australian Air Force to fit two Westinghouse J34 turbojets as boosters to each Lockheed Neptune of No. 11 Sqn., R.A.A.F. Most operational U.S. Navy Neptunes have such equipment.

* * *

The 12th All-England Aircraft Recognition Contest, organized by the Aircraft Recognition Society, is being held on January 17 at the Royal Society of Arts, 6 John Adam Street, London, W.C.2. Entry forms are obtainable from the Hon. Secretary, Aircraft Recognition Society, 15 Tavistock Street, London, W.C.2.

* * *

The U.S. Navy have chosen to order the McDonnell F4H-1 (apparently in preference to the Chance Vought F8U-3) as its next-generation carrier-based intercepter. Unlike the F8U-3, the F4H-1 has two engines and carries a crew of two (see *Flight* for October 3, p. 547). A decision in this contest has been awaited for many months.

* * *

The U.S.A.F. Military Air Transport Service made over 80 flights during November transporting equipment to Thor IRBM bases in Britain from the Douglas Aircraft premises at Long Beach, Cal. The M.A.T.S. commander, Lt-Gen. W. Tunner, said at Scott A.F.B., Ill, recently that his aircraft [mainly C-133s and C-124s] had made over 250 delivery flights to Britain since this operation began in September.

* * *

On December 22 the American National Aeronautics and Space Administration stated that it will spend $200m (£71,428,600) over the next four years in developing a rocket engine with a single chamber rated at 1,000,000 lb thrust. The contract has been awarded to North American (Rocketdyne Division). Also on December 22, the U.S.A.F. negotiated a $50m contract for additional Snark intercontinental cruise-type missiles for Strategic Air Command.

Nottingham University has accepted a gift of £100,000 from Rolls-Royce Ltd. to endow a chair in thermodynamics. This will be known as the Hives Chair, to mark the close link between the university and the former chairman of the company, Lord Hives.

* * *

A complete guide to the National Boat Show (Olympia, London, December 31—January 10) is provided by the special January issue of our associated journal *Yachting World*.

* * *

The heavier and more powerful Lockheed C-130B version of the Hercules made its first flight at the Corporation's Georgia Division on December 10. Maximum weight has been raised from 124,000 to 135,000 lb, and Allison T56-7 engines provide 16,200 h.p., an increase of 1,200 over the C-130A.

* * *

A new Hawker Siddeley Group company, Hawker Siddeley (Hamble), has been formed to service Petter and Armstrong Siddeley diesel engines and to manufacture generating sets, marine propulsion units and marine auxiliaries. The directors will be Sir George Briggs (chairman), Mr. D. K. Fraser (managing) and Mr. J. C. Dacomb, and the company will have accommodation with A.S.T. at Hamble.

* * *

Two U.S.A.F. pilots in F-104 Starfighters recently intercepted and theoretically destroyed an "enemy" aircraft 172 miles from their base only 8 min 59.2 sec after they took off. It was stated by Gen. Curtis LeMay, Vice-Chief of Staff, that the intercepted aircraft was flying at 35,000ft and the Starfighters' mean speed from brakes-off was 1,150 m.p.h.

* * *

A bronze plaque was unveiled at Roosevelt Field, New York, on December 15 to commemorate the arrival there of the airship R.34 after its flight from East Fortune in 1919. The plaque, donated by the Air League of the British Empire, has been set in a marble plinth on the Bosch Arma Corporation premises, which now occupy part of the former airfield.

* * *

Indicative of the production capacity of Boeing's Transport Division at Renton, Wash., is the fact that, parallel with the 707 airliner, the KC-135A Stratotanker is being turned out at a steady rate of 15 aircraft per month. Now cleared for a gross weight of 297,000 lb, the KC-135A is standard global tanker/transport of the U.S.A.F. Strategic Air Command. The 200th flew on December 22.

* * *

A course of studies on acoustics as applied to aircraft and the effects of noise on structures was held at the University of Southampton by the Department of Aeronautical Engineering from December 15 to 20. Among the lecturers were Prof. E. J. Richards (the fundamentals of noise, jet and propeller noise and Lighthill's theory of the subject) and Mr. D. J. Mead (fundamentals of vibration theory, random response theory and the damping of structural vibrations). There was an attendance of forty-three, including representatives from aircraft companies and airlines (several of them overseas) and research establishments.

Straight and Level

ACCORDING to the American journal *Missiles and Rockets*: "Russian submarines are operating off Cape Canaveral despite a statement to the contrary made by Maj-Gen. Donald Yates. Can reported instances of jamming of missile telemetering channels be explained? Or, the case of a diver retrieving a missile 14 miles away in 100ft of water, having seen a submarine and the air hose of another diver?

"The other diver left his boot mark on the missile's tail assembly, and whereabouts of some parts of this particular missile apparently are in doubt."

Perhaps we ought to investigate the kangaroos in the Australian outback near Woomera, to see what they've got in their pouches; and I recently saw a nasty suspicious look in the eyes of a fish in Cardigan Bay.

Excuse me, I have to take my hourly sedative.

● Having now calmed myself, I settle down to read a nice soothing-looking book about "roadable" aeroplanes. It is by an American, Mr. Daniel R. Zuck. Here is an extract (for a fuller review see page 12):—

"We fail to realize that we live in our concentrated cities at the sole mercy of our Soviet enemies. When the Soviets command their bombing forces to attack us, we who live in our large concentrated cities will face immediate death. . . .

"We can be assured that the enemy's Joint Chiefs of Staff have a well-organized plan to obliterate our present large and concentrated cities at the very start of the next war. We must therefore decentralize to strengthen our home defenses. . . . The key to decentralization is greater ease and speed in personal transportation. *And this is found in the roadable airplane.* . . . The personal plane can negate the inevitability of war by giving us a national strength no aggressor may challenge."

Nurse! Another sedative, please.

● Aircraft manufacturers are, as a rule, good neighbours. They know that local communities have it within their power to enjoin them to restrain the din of jet test-beds and the ground-running of jet aircraft. Many firms have spent a good deal of money on noise-suppression devices, and some have agreed to restrict running to certain hours and days of the week.

But there are still some who are bad neighbours—who not only haven't bothered about silencers, but who also need a course in rudimentary public relations. On two successive Sunday mornings recently the roar of jets caused a friend's wife to telephone the firm concerned to protest. Though her house is three miles away from the airfield, normal conversation indoors was difficult and—more important to her—her child was ill and couldn't sleep. The only answer she got each time from the man who answered the call was: "I can't hear anything." For originality of public relations I have to doff my hat to that one.

But when, having made a few enquiries about noise-suppression, she suggested that the firm concerned might acquire a silencer she was told that no such thing existed. Obviously there's no market there for our enterprising silencer-manufacturers.

I recently suggested that airline pilots will very soon be wanting to oust stewardesses as well as flight engineers. You might guess that this picture was sent to me by an enraged International Stewardesses Union, but you would be wrong. It shows Capt. Jack Slade of T.A.A. demonstrating a new Dove ambulance to two de Havilland (Australia) secretaries

● *"All the heat and hurry of this future travel will not be the fault of the airlines. The blame rests entirely with the passengers, most of whom are always in such a hurry that no speed, however high, is fast enough for them."*—From an article in *The Times* about cooling supersonic airliners.

Steady on! The only thing that passengers are concerned about is the price of a ticket. There may, of course, be certain Top People who want to go faster, faster and faster. But the masses upon whom the airlines—and hence the aircraft manufacturers—depend for their future prosperity want only one thing: a cheap fare. Until they get it they will continue to patronize the trains, boats, motor-cars, ox-carts, rickshaws and mammy-wagons.

The only people to blame for the faster-faster-faster approach are the airlines themselves. To blame the passenger, when you come to consider it, is a classic double-think.

● By contrast here is a ten-out-of-ten quote from the *Daily Express* of the following day. This paper said that the Vanguard and the Argosy "are sending out a seasonal message calculated to ring a merry tinkle in the emptying coffers of the world airlines . . ." It added: "If this message is ignored many airlines will go bankrupt and their fare-fixing 'union,' the International Air Transport Association, will finally have the big bust-up that has been so narrowly avoided in the past."

The *Express* isn't being beastly to the jets: their matchless appeal makes them indispensable tools of the trade. But the turboprops have a message too.

● There are quite a few captains of this country's aircraft industry who, between you and me, never go up in an aeroplane. That's no secret, but I am happy to record an example of another point of view—that of Mr. Peter Masefield, managing director of Bristol Aircraft. During 1958 he flew his Chipmunk from Filton to Croydon and back at least once (and often two or three times) *every week*, with the exception of the fogbound first week of December.

● Gradually I am becoming aware of the significance of the first full-range flight of Convair's Atlas ICBM. A little more than a month ago one of the Atlas B test vehicles, complete with its radio-inertial guidance system and all three engines, successfully flew 6,355 statute miles from Cape Canaveral, "impacting" 30 miles beyond its target point near Ascension Island. This flight proved, among other things, that the novel airframe can withstand the tremendous tasks imposed on it, that the complex propulsion system works, that the guidance is almost accurate enough and that the nose-cone can bring back the payload safely, if that is the right adverb. In short, that the temporarily ultimate weapon of 1959 has arrived.

What I do not yet understand is why the Atlas should not have carried the General Electric Mk 1 nose-cone, but should instead have worn a conical, more pointed device. According to *Aviation Week*, the change was made in order to restrict the launching weight to that of an operational Atlas, notwithstanding the heavy packages of instrumentation carried. The weighty G.E. cone, which is of the slab-copper heat-sink type, has so far cost the U.S. taxpayer at least £56,000,000. Are we now to understand that the job can be done by something lighter and cheaper?

● Incidentally, you may not like my use of the word "flew" to describe the motion of a ballistic missile. I am prepared to argue the point; for doesn't a cricket ball fly? As for "impacting"—it's the present participle of the verb "to impact," conjugated as follows: I impact, thou impactest, he impacts, she impacts, etc. . . ."

ROGER BACON

Pictured over the Sydney Harbour area, this R.A.A.F. Lockheed C-130 Hercules was one of the first five to arrive from the U.S. of the twelve which are on order for the R.A.A.F.

SERVICE AVIATION

Royal Air Forces and Naval Flying News

New Year Promotions

FOUR new air vice-marshals are named in the Air Ministry list of half-yearly promotions, announced this week and taking effect from January 1. Those in the G.D. Branch are A. Cdre. (acting A.V-M.) J. G. Davis, S.A.S.O. at Bomber Command; A. Cdre. D. J. P. Lee, Secretary, Chiefs of Staff Committee, Ministry of Defence; and A. Cdre. B. K. Burnett, whose new posting is to be announced. In the Technical Branch the Director-General of Engineering at Air Ministry, Acting A.V-M. G. Silyn-Roberts, is promoted from air commodore to air vice-marshal.

Fighter Command Post

SUCCEEDING A.V-M. V. S. Bowling, whose new appointment is shortly to be announced, A. Cdre. Alick Foord-Kelcey is to be A.O.C. No. 11 Group from January 12 with the acting rank of air vice-marshal. He has just completed the Imperial Defence College course, prior to which he was Assistant Chief of Staff at AAFCE.

A Canadian by birth, A. Cdre. Foord-Kelcey was educated in this country and joined the R.A.F. in 1935. Among his wartime appointments were the command of Nos. 8 and 55 Sqns. in the Middle East and that of Chief Flying Instructor at Cranwell (1942-43). He was awarded the A.F.C. in 1943 and made a C.B.E. in 1956.

Inaugurating a Command

WHEN R.A.F. Signals Command held a dinner at Medmenham on December 18 to mark its formation the C.A.S., Marshal of the R.A.F. Sir Dermot Boyle, said that it was because of the Air Force's great reliance on electronic aids and because of the invaluable work that No. 90 Group had done over the past ten years that the Air Council had decided to grant it Command status.

A.V-M. L. Dalton-Morris, the A.O.C-in-C., said that a separate signals command was unique in the air forces of the world and indeed had no counterpart in either of the other Services. There were some 2,500 civilians employed by the Command, including some 150 at headquarters as radio engineers, designers and consultants. "This body of experts represents a sizeable proportion of our national assets in the technological field," said A.V-M. Dalton-Morris, "and we must make very sure that we use them to the best advantage."

Until 1939 there was no exclusive R.A.F. signals formation; then in 1940 two signals groups were formed, Nos. 26 and 60, the former to handle problems of world-wide communication and the latter within Fighter Command to specialize in radar work. At the same time No. 80 Wing was engaged on upsetting enemy radar. In 1946 the functions of all these formations were taken over by No. 90 Group, which on November 3 last year became Signals Command.

Manila Stars

TWO Vulcans of No. 83 Sqn. "stole the show" when they participated in an aviation display at Manila in the Philippines. Reporting this when the aircraft arrived back at R.A.F. Waddington on December 19 the squadron commander, W/C. L. F. Banks, said that the local people were so impressed that three fire hoses had to be used to keep them away from the Vulcans.

Participation at Manila formed the climax of a month's goodwill tour which had included visits to Ankara, Karachi and Malaya.

Inventors Rewarded

FOUR awards have been made by the Air Council to members of the R.A.F. on the recommendation of the M.o.S. Committee on Awards to Inventors. One of £150 goes to W/C. K. H. Wallis, who is on the armaments staff at H.Q. Fighter Command, for a modification to the 25 lb practice bomb which makes it safer and also more efficient in operation. W/O. F. J. Gow, of the A. and A.E.E., Boscombe Down, receives £25 for designing a tool for use in servicing airborne radar, so that a job which used to take two men up to 15 minutes can now be done by one man in two minutes. M/Tech. A. W. Hawkes, of R.A.F. Kinloss, is awarded £50 (in addition to £20 already granted by the A.O.C-in-C. Bomber Command) for five suggestions which have saved considerable time in the servicing of refueller filter packs; and Cpl/Tech. F. J. Edwards, now at R.A.F. St. Mawgan, receives £50 for designing a tool which saves some six man-hours per squadron weekly and reduces wear and tear on engine cowlings in the servicing of Avons in Canberras.

Pictorial History

NO. 14 Sqn. wishes to improve its picture gallery of photographs of aircraft which have flown with the squadron since it was formed in 1915, and would be glad to hear from anyone with such material available. The squadron's markings are three blue diamonds on a rectangular white background on either side of the fuselage roundel; equipment has varied from B.E.2cs and Wellesleys to Blenheim 4s and Hunter 4s and 6s. Photographs (which will be returned to their owners subsequently if required) should be sent to S/L. K. E. Richardson, Officer Commanding, No. 14 Sqn., R.A.F. Gutersloh, B.F.P.O. 39. The squadron also welcomes correspondence from ex-members wishing to know something of its current activities.

R.A.F. Postings

AMONG recent Royal Air Force appointments announced by Air Ministry are the following:—

W/C.s G. Buckle to H.Q., Eastern Atlantic Area, NATO, for exercise planning duties; A. M. Gill to H.Q., M.E.A.F., for operational staff duties; E. F. Hales to Air Ministry, for duty in the Department of the Air Member for Supply and Organization; A. P. Morgan to the R.N. Staff College, for directing staff duties; R. E. Powell to Air Ministry, for duty in the Department of the Air Member for Supply and Organization; R. A. Schofield to R.A.F. Horsham St. Faith, for administrative duties; K. C. R. Smith to Air Ministry, for duty in the Department of the Air Member for Supply and Organization; and P. D. J. Wood to Air Ministry, for duty in the Department of the Air Member for Supply and Organization.

S/L. Peter Latham, successor to S/L. Roger Topp (who is taking up an AAFCE post) as C.O. of No. 111 Sqn. On the staff of the Day Fighter Leaders' School before going to Air Ministry two years ago, he had previously served with Nos. 26, 614, 247 and 263 Sqns.

IN BRIEF

R.A.F. Innsworth has won the senior award and R.A.F. Mountbatten the junior in the 1958 competition for the Air Ministry Mechanical Transport Senior and Junior Efficiency Trophies. Runners-up were, respectively, R.A.F. Ternhill and R.A.F. Tichfield.

* * * * *

A tie has been designed for past and present members of No. 2 Air Navigation School. Made of terylene, and bearing the No. 2 A.N.S. crest on a navy blue background, the ties cost 14s each (post free) and may be obtained from the Station Adjutant, R.A.F. Thorney Island, Emsworth, Hants.

Two important new turbine transports, one British and one American, and each intended for very different markets, emerged before Christmas. Above, the AW.650 Argosy (Rolls-Royce Dart turboprops), rolled out on December 20 at Coventry; and below, the Convair 880 (G.E. CJ-805 turbojets), rolled out on December 15 at San Diego. Each is expected to make its first flight this month

AIR COMMERCE

TRANSATLANTIC BRITANNIA ANNIVERSARY

THE Bristol Britannia 310 has now completed a full year of North Atlantic operations in B.O.A.C. and El Al service. B.O.A.C. inaugurated operations between London and New York (later extended to other points in the U.S.A. and Canada) on December 19, 1957. The Israeli airline inaugurated operations between Tel Aviv and New York, via London, three days later.

How has the aircraft fared? In the table below are summarized salient facts and figures relating to B.O.A.C.'s Britannia 312 operations. The figures are provisional, but they offer an opportunity for an interesting preliminary analysis.

Transatlantic Britannia 312: First Year's Results

Available seat-miles *:—		
First-class		49,081,000
Tourist		61,958,000
Economy		120,791,000
Total		231,830,000
Passenger miles flown *:—		
First-class		31,938,000
Tourist		39,938,000
Economy		73,028,000
Total		144,904,000
Total passenger load-factor *		62.5 per cent
Break-even passenger load-factor (based on data to October 11)		71 per cent
Number of passengers carried *		40,550
Number of single Atlantic crossings:—		
Westbound	323	
Eastbound	322	
Combined	645	
Number of non-stop crossings:—		
Westbound	234	(72 per cent)
Eastbound	288	(90 per cent)
Combined	522	(81 per cent)
Number of crossings within one hour of schedule:—		
Westbound	142	(44 per cent)
Eastbound	179	(56 per cent)
Combined	321	(50 per cent)
Average fleet strength:—		
Total		13.1 aircraft
Operational		9.1 aircraft
Average revenue hours flown/aircraft		1,164 hr
Total strength revenue daily utilization on revenue flying		3.2 hr/aircraft
Operational strength revenue daily utilization		4.6 hr/aircraft
Average fuel consumed:—		
London-New York		26,730 kg
New York-London		22,680 kg

All figures except those marked * are for December 19, 1957, to December 18, 1958. Those marked * are for December 19, 1957, to December 20, 1958.

Assuming typical passenger-mile revenue rates (net) as about 9d first-class, 7d tourist and 5d economy, it is apparent from B.O.A.C.'s 71 per cent break-even passenger load factor that a loss of about £1.5 million was experienced. This figure does not take account of mail or freight revenues, but is nevertheless a surprisingly—and disappointingly—high loss. It could well be largely attributable to the very low utilization rates.

Other figures which emerge are a total cost for North Atlantic Britannia 312 operations of about £4.38 million. This, assuming a total flying mileage of about 2.8 million, yields an aircraft-mile cost of about 30s, and a seat-mile cost of about 4½d at existing B.O.A.C. seating configurations.

The verdict on B.O.A.C.'s first year of transatlantic Britannia operations must be that it has been disappointing. But it can be expected to improve considerably in the coming year as utilization increases. It is not yet known how El Al fared, but it is believed that they have made a profit from their Britannia operations.

Of particular interest to the layman is the fact that half the flights arrived more than an hour late, illustrating the disparity—more general than is widely supposed by users of many airlines—between timetable and actual flight times.

"AIR COMMERCE": Regular readers will notice a change in the title of these pages, formerly known as "Civil Aviation." The change has been made in order to reflect their content more precisely

THE 2,000-HR PROTEUS

AFTER less than two years in service, the Proteus 705 overhaul life has now been authorized by the A.R.B. to be increased from 1,600 to 2,000 hr. These engines are installed only in B.O.A.C.'s 15 Britannia 102s, the longer-range Britannias being powered by the 750- and 760-series.

Further to improve the performance of these later Proteus versions, the manufacturers are now developing an improved series, the 770. Rated take-off power is increased by 5 per cent to 4,615 e.h.p. while fuel consumption (25,000ft, 300 kt, I.S.A.C., maximum continuous power) has been reduced by 3 per cent to 0.484 s.f.c.

B.O.A.C.'s ASSOCIATES: NEW MOVES

CATHAY PACIFIC and B.O.A.C. have taken over the colony's second airline, Hong Kong Airways. Ten years ago the government decreed that C.P.A. could operate the routes leading south from the capital, while Hong Kong Airways (which subsequently became a B.O.A.C. associated company) concentrated on the northern routes. Not only has this arrangement proved increasingly unsatisfactory, but continued financial difficulties have also pointed towards a merger.

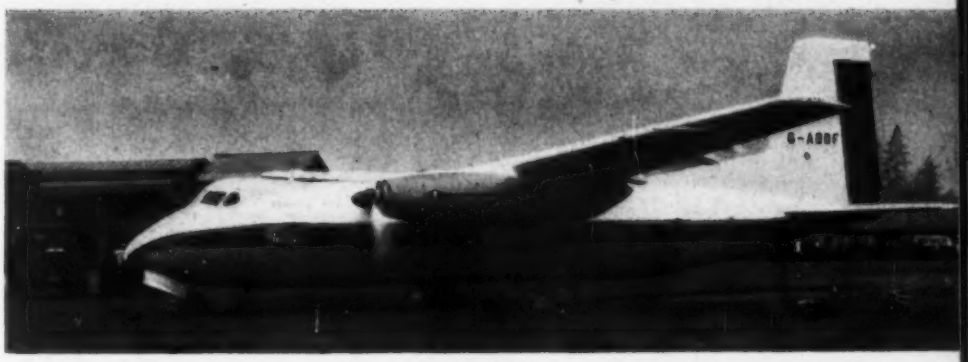
The finances of these two airlines present to the outsider a picture of complication unrivalled elsewhere, even in the Orient. Cathay Pacific was founded by a local trading company, Butterfield and Swire, which initially controlled over three-quarters of the capital. This share was later reduced to 52 per cent, the balance being held by China Navigation (this company is associated with P. and O. which, in turn, has a major share in British Aviation Services), A.N.A. (later absorbed by Ansett), and the Borneo Company. Another trading company, Jardine Matheson, until recently controlled all the shares in Hong Kong Airways (and also in the Indo-China Steam Navigation Company), but a share in this airline was acquired by B.O.A.C. in 1955.

Details of the C.P.A.-B.O.A.C. ownership have not yet been revealed but it appears that Butterfield and Swire will control the capital, the balance being held by B.O.A.C. and Jardine Matheson. The reorganization might also allow the solution of an old problem concerning airline abbreviations: after the war three airlines were to be found with the initials C.P.A.—Commonwealth Pacific, Cathay Pacific and Canadian Pacific. The first of these was liquidated in 1954; the second might well now emerge with a new title, and that would leave the Canadian carrier alone in this field—a development that would be appreciated by reservation clerks throughout the world.

Looked at in its broad perspective, the merger of Hong Kong Airways with Cathay Pacific appears to be a further move by B.O.A.C. to reduce the liability (about £500,000 last year) of its associated companies.

On the other side of the world, in the Caribbean, B.O.A.C. have announced the appointment of Mr. H. O. B. Wooding as chairman of B.W.I.A.—another associated company which has been giving B.O.A.C. cause for financial concern. Mr. Wooding takes over from Sir Errol dos Santos (who was appointed president in November). Of particular interest is the appointment of A. Cdre. G. J. Powell as B.O.A.C.'s representative on B.W.I.A.'s Board. He will act as adviser to Mr. Wooding. "Taffy" Powell has been remarkably active since his retirement, for reasons of health, from British Aviation Services in 1957. He played a leading part in the launching of Eagle Airways (Bermuda) as adviser to Mr. Harold Bamberg, Eagle Aviation's managing director; and more recently he has been investigating the operational and financial structure of B.W.I.A. on behalf of B.O.A.C.

AIR COMMERCE . . .



The second Dart Herald prototype took to the air on December 17. The maiden flight, with Handley Page's chief test pilot S/L. H. Hazelden at the controls, was made from Woodley, near Reading

I.C.A.O.'s CHIEF EXECUTIVE

A CANADIAN has been appointed to the post of secretary-general of I.C.A.O. Next June, after the conclusion of the twelfth annual session of the organization's assembly at San Diego, Mr. Ronald M. Macdonnell will take over from Mr. Carl Ljungberg, who is due to retire after having served as secretary-general for seven years.

Mr. Macdonnell is at present Deputy Under-Secretary in the Canadian Department of External Affairs. Previous positions in the diplomatic service include that of ambassador to the United Arab Republic, minister to France and commissioner on the International Supervisory Commission in Viet-Nam and Cambodia. Mr. Macdonnell attended the Chicago convention in 1944 and for five years he supervised civil aviation policy in the Department of External Affairs.

PHILIPPINE FEEDER FILLIP

IN 1954 Philippine Air Lines purchased three 11-seat Otters to develop a network of feeder services connecting main towns with those points where airfield facilities were inadequate for the airline's DC-3s. Operation of these aircraft was limited to the southern half of the country, this area including the many small islands in the Visaya group and, in the extreme south, Mindanao island.

Traffic on these Otter services had built up by last year to over 800 passengers a week and it was decided to extend the feeder network to include points in the main northern island, Luzon (where the capital, Manila, is located). A Twin Pioneer had been satisfactorily demonstrated at Manila in March, 1957, and the airline decided to purchase five of these 19-seat aircraft. The P.A.L. order specified replacement of the Leonides engines by Pratt and Whitney R-1340s, the addition of 74 cu ft to the cargo compartment and the use of American instrumentation.

The first of P.A.L.'s Twin-Pioneers took the air at the time of the Farnborough show last September. Delivery is due to take place within the next few months.

CARAVELLE HALF-CENTURY

SALES of the Sud Caravelle now number 50, Air Algerie having recently taken up an option on a fourth aircraft. Air France and S.A.S. are the major customers (having ordered 24 and 16 respectively), the other ten aircraft having been purchased by Varig (2), Air Algerie (4), Finnair (3) and Royal Air Maroc (1). Options are believed to cover a further 13 aircraft. Four of the S.A.S. aircraft will be operated by Swissair.

The first six will be delivered to Air France and S.A.S. by May 15, almost exactly a year after the maiden flight of the first production aircraft. Delivery of both these airlines' fleets should be completed towards the end of 1960. The Varig fleet is due to be delivered this summer, while the Caravelles destined for Air Algerie, Finnair and Royal Air Maroc should see service early in 1960.

Assembly of the first six aircraft has now been completed at Toulouse, and their equipment and cabin fittings are being finally installed. The airframes of the next three are completely assembled, and a further twenty are in various stages of assembly. Fore-sections of the fuselage are constructed at Sud's Marignane division, while their two plants at St. Nazaire and Bouguenais are responsible for the wings. The after sections of the fuselage are sub-contracted to Bréguet and Latécoère. Forges de Boissieres, Hispano-Suiza and Fiat are also participating in the Caravelle programme.

Production plans allow for the manufacture of at least 20 aircraft in 1959, with output rate rising to three a month in the first half of 1960 and to four a month in the second half of the year.

BRITAIN'S LONG-HAUL PYGMIES

JUDGING from the latest B.I.A.T.A. annual statistics, either the British armed Services are starving their men or the Welfare State is not living up to its name. In short, the average Serviceman appears to be sadly underfed.

The only convenient source of information on the volume of military charter is the B.I.A.T.A. report which analyses the members' non-scheduled traffic. From these statistics it can be seen that each person travelling on a trooping flight is only half the weight of the typical passenger on a civilian service. To be specific, 11 passengers are usually equivalent to one ton of payload. But on trooping services it is apparently possible to squeeze well over 20 diminutive travellers into each ton.

Two explanations can be dismissed immediately: It is not true that a large proportion of those travelling on trooping services are child-brides, seat-occupying infants or hitch-hiking students; and there is no reason to believe that lightweight Gurkhas account for a majority of servicemen.

This extraordinary state of affairs is a recent phenomenon and has led to some strange features appearing in the independents' non-scheduled statistics. The accompanying table, extracted from the B.I.A.T.A. annual report for 1957-58, shows that passenger-miles on non-scheduled services have increased by 27 per cent while passenger ton-miles have dropped by 33 per cent. Not only has the average passenger weight been almost cut in half, but the typical length of journey has increased by some 40 per cent. This last figure is the average for civilian and military services, and when the civilian group is excluded (this actually showed a fall in average journey-length from 446 to 364 miles), the typical length of haul for a passenger on a trooping service is shown to have increased by over 60 per cent from 3,300 to 5,300 miles.

Before anyone suggests setting-up a Parliamentary committee to investigate these implications concerning the feeding and transporting of Servicemen, he would be wise to cross-check the B.I.A.T.A. statistics against those of the individual members—and perhaps to verify the basic figures for each carrier. Even the greatest airlines are known to have gone astray on their statistical reporting.

Non-scheduled traffic	1956-57	1957-58
Capacity ton-miles (×1m)	112	111
Total load ton-miles (×1m)	89	94
Freight ton-miles (×1m)	30	55
Passenger ton-miles (×1m)	59	39
Passenger miles (×1m)	660	842
Passengers per ton	11	22
Passengers (×1,000)	480	445
Miles per passenger (×1,000)	1.4	1.9

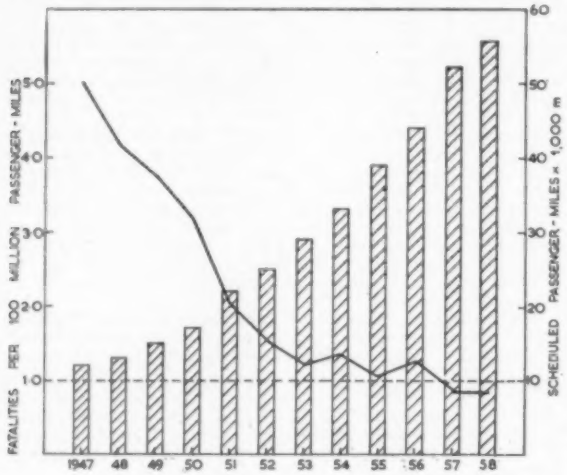
Sixteen aircrew from Aerolineas Argentinas have recently concluded a seven-week training course at Hatfield. One of their senior pilots, Capt. L. H. Fortin, together with his wife, is seen inspecting the first of Aerolineas' six Comet 4s

AIR COMMERCE... 1958 SAFETY RECORD

MORE people were killed last year in airline accidents in the free world than in any previous twelvemonth: in some 50 separate tragedies over 800 lives of passengers and crew were lost. Yet the growth of air transport is such that last year's fatality rates were possibily the least alarming in the history of the industry.

Excluding accidents on non-scheduled flights, the estimated number of passenger fatalities in 1958 stands at about 500—precise figures will not be available until official I.C.A.O. statistics are published next summer. Related to last year's traffic, this implies a global fatality rate of 0.9 per 100 million passenger-miles. Compared with 1957, the rate for the world's airlines thus remains substantially unchanged (only in the last two years has this fatality rate been less than unity).

Regional rates differ sharply from these global averages. North America and Australasia continued to experience the best safety records, their rates continuing to be less than half the overall figure. Airlines in Latin America, Asia, Africa and the Middle East—which have in past years shown collectively the worst results—improved their performance and experienced an average rate of about two fatalities per 100 million passenger-miles. The black spot for the year must be recorded against the European carriers. In terms of statistics the airlines of Europe were more dangerous than those of any other region. To put their record into perspective, they accounted together for less an one-fifth of global air traffic but over one-half of global fatalities.



It is difficult to establish precise reasons why such wide regional differences should exist. But it cannot be coincidence that the "safe" regions are those which are climatically and economically most favoured. The "dangerous" regions tend to be those which are affected by difficult weather conditions—bad visibility, high humidity and severe turbulence—or where the volume of traffic is insufficient to allow the use of the most modern equipment and techniques.

Contrary to widely held belief, the carriers with encouraging records are those whose operations tend to be small in scale or short-haul in character. As in previous years, a remarkable number of last year's accidents took place on routes which were relatively infrequently flown by the operator concerned.

An alarming feature of the safety record for 1958 was the number of collisions and near misses. The two most tragic incidents each involved military aircraft: A United DC-7 was struck by a U.S.A.F. F-100 over Nevada in April; and a B.E.A. Viscount collided with an Italian F-86 near Naples in October.

Footnote: There were three accidents, not included in the above analysis, over the Christmas period. Two were on French scheduled services. A U.A.T. DC-6B crashed on take-off at Salisbury, S. Rhodesia, on Boxing Day causing the loss of three lives among the 63 passengers and crew of seven on board. At Vienna on Christmas Day, Air France Super Constellation F-BAZX crashed and burnt out near Schwechat Airport, fortunately without loss of life. On Christmas Eve, B.O.A.C. Britannia 312 G-AOVD, on a local flight from London Airport, crashed near Christchurch, Hants. There were 12 B.O.A.C. employees, five of them crew, on board, and nine lost their lives. The three injured survivors include the first officer. The commander, who had not reported any trouble, was Capt. J. E. Jackson.

BREVITIES

B.O.A.C. Comet 4 G-APDC inaugurated the first U.K.-Canada jet service when it arrived in Montreal on December 20. Operations will be at a weekly frequency initially.

* * *

A Caravelle flight simulator has been ordered by S.A.S. from Redifon. It will be installed at the airline's Stockholm base.

* * *

The I.A.T.A. traffic conference on jet fares, abandoned at Cannes in October, will be resumed in Paris on January 20.

* * *

Canadian Marconi are now delivering Doppler to PanAm for installation in Boeing 707-120s.

* * *

Eagle announce an addition to their proposed low-fare colonial services—from London to Hong Kong via Aden. Proposed fares will be £136 13s single to Hong Kong, compared with £224 normal tourist rate.

* * *

B.K.S. have arranged a series of daily charter flights between Luton and Belfast with Vauxhall Motors. Their Bristol 170 will carry new cars and spares on the outward journey and contract cargo on the return.

* * *

Scheduled traffic carried by all U.K. airlines in October was 4 per cent less than in October 1957. This fall is wholly due to the B.O.A.C. strike, traffic for B.E.A. and the independents having increased by about 13 per cent.

* * *

Aviation Week reports that Pan American have experienced their first premature jet engine removal from a 707 resulting from damage caused by debris-ingestion. The damage was discovered at Paris last month; a spare engine was flown from London.

* * *

The C.A.B. is investigating National's practice of charging first-class fares for economy-class seats on 707 services between New York and Miami. The Board (which has approved a $10 de luxe surcharge) says that the practice may be "unlawful."

Hunting-Clan substituted DC-6As for Yorks on their Africargo service on December 14.

* * *

All B.E.A. and Swissair services between U.K. and Switzerland will be operated in pool from April 1.

* * *

The United Kingdom and Spain have been re-negotiating their 1950 Air Agreement. No details of the discussions have been made available.

* * *

Flight regrets to record that Capt. D. F. MacMaster, assistant operations manager of Qantas, died suddenly while on holiday with his family in Australia on December 27. He was 46.

* * *

It is reported from Buenos Aires that Aerolineas Argentinas have decided to purchase a fleet of Friendships, from 10 to 20 in number, to replace DC-3s and DC-4s.

* * *

Air France will put Caravelles on to the Paris - Rome - Athens - Istanbul route in May; on to Paris - Warsaw - Moscow in July; on to Paris - Rome - Tel Aviv in September; and on Paris - Algiers in October. Services to Stockholm and later between Nice and London will begin at the end of the year.

* * *

Skyways announce the formation of a subsidiary to deal with their expanding Coach Air services between the U.K. and the Continent. Known as Skyways Coach Air Ltd., it will be responsible for all Coach Air services with the exception of that to Vichy and Montpellier, which will remain the concern of the parent company.

* * *

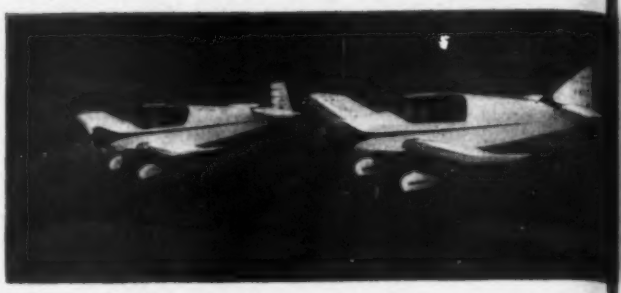
I.C.A.O. estimates for 1958 show that global passenger traffic increased by 5 per cent while the volume of freight and mail rose by 1 and 7 per cent. Long-haul traffic continued to grow rapidly (largely as a result of the economy-class surge across the North Atlantic) and average passenger-haul reached the record distance of 600 miles.

PILOTS' PARTY

As depicted last week, H.R.H. Prince Philip was guest of honour at B.A.L.P.A.'s cocktail party in London on December 17. "Flight's" camera also caught:—

(1) The Duke of Hamilton and Brandon, B.A.L.P.A. president; Capt. A. Spooner, B.O.A.C.; Sir Robert Perkins, B.A.L.P.A. vice-president. (2) A. Cdre. Whitney Straight, Rolls-Royce; Mr. Peter Masefield, Bristol; Mr. A. H. Milward, B.E.A.; Mr. Airey Neave, M.P., M.T.C.A. (3) Capt. A. G. Store, B.O.A.C.; Sir Frederick Tymms, G.A.P.A.N. (4) Mr. E. J. Ristow, N.J.C.; Mr. J. E. Rylands, Skyways; Mr. Jim Matthews, N.J.C. (5) Sir Arthur Harvey, M.P., B.A.S.; Sir Gerard d'Erlanger, B.O.A.C. (6) Capts. A. B. Dykes, G. G. Stead and D. A. Cracknell, B.O.A.C. (7) Maj. James Cordes, G.A.P.A.N.; Capt. T. W. Morton. Morton/Olley; Miss G. Mackay, G.A.P.A.N. (8) Capt. G. G. McLannahan, B.E.A.; Mr. John Cunningham, D.H. Aircraft (9) Capt. S. Beevers and Maj-Gen. C. G. B. Greaves, Eagle; Mr. M. D. N. Wyatt, Airwork. (10) Capt. R. O. Bushman, A.L.P.A.; Capt. J. I. Pengelly, B.A.L.P.A. (11) Capt. C. C. Jackson, I.F.A.L.P.A.; Mr. S. R. Brimblecombe, Corporations' Pension Scheme; Capt. C. G. Klimcke, B.E.A. (12) Capt. P. E. Bressey, B.E.A.; Mr. P. G. Tweedie, M.T.C.A. (13) Mr. J. G. K. Gregory, M.N.A.L.O.A.; Capts. J. Woodman and F. W. Walton, B.O.A.C. (14) Capts. E. Starling, W. J. Johnson and S. L. Arnold-Beakes, B.E.A.

Club and Gliding News



French light aircraft attracted great interest in this country during 1958. Right, the two-seater Jodel D.117 and four-seater D.140 Mousquetaire, built by Société Aéronautique Normande, whose U.K. agents are Rollasons of Croydon. Lower right, an Elstree line-up last summer comprising the T.K. Group's amateur-built Turbi, the P.F.A. Turbi built by Britten-Norman, and the Scanor company's Emeraude

AN enquiry to the Ministry of Transport and Civil Aviation by *Flight* on December 24 concerning the position of the flying clubs at Croydon Airport—and in particular the question of whether the clubs could continue to operate there after December 31, 1958—was answered by the statement that the Ministry had nothing to add to the decision given by Mr. Airey Neave in the House of Commons on November 14. As Mr. Neave had said on this occasion that "all flying activities by clubs must cease on 31st December next," the implication on December 24 was that, in one week's time and with no arrangement for alternative accommodation completed, the clubs would have to leave Croydon. Consideration was being given, the M.T.C.A. spokesman said, to a request for an extension to enable the clubs to continue to fly at Croydon while an alternative base was found. The spokesman did not say how long this request had been under consideration by the Ministry, but *Flight* understands that two applications for extension had been made by the Croydon Airport Users' Association, on November 18 and on December 12.

Included in the lengthy statement by Mr. Neave on November 14 were the following extracts:—

"We do not rejoice at all in the closure of Croydon. I want to make that quite clear. We recognize that it has played a great rôle in aviation in this country, and we recognize also that, in some respects, the facilities that it offers will be hard to replace. However, the Government have now decided, through the setting up of a standing joint committee on private flying, to examine the long-term prospects of private flying, to which Hon. Members have referred and, in particular, to look at the establishment of what has been described as an aviation centre or a suitable aerodrome for private and club fliers. . . .

"The position, therefore, is that all flying activities by clubs must cease on 31st December next. The business of their transfer to Biggin Hill should be effected more speedily than the transfer of charter and executive flyers and other business firms using Croydon. In their case, my Right Hon. Friend is prepared to allow Croydon to remain open for a very limited period after 31st December, during which there will be a progressive running-down of operations concurrently with the transfer of tenants elsewhere . . ."

Meetings between Ministry officials and Croydon Airport users were due to be held last Monday and Tuesday (December 29 and 30). Among the items to be discussed was the suggestion that club aircraft might continue to be based at Croydon temporarily, provided that training flying was carried out from Biggin Hill.

ORGANIZED by the Victorian Soaring Association, the Australian National Soaring Contest is now taking place at Benalla Aerodrome, some 120 miles north-east of Melbourne. The contest began on December 28 and will end on January 9.

THE forthcoming production of a new indigenous light aircraft is reported from Australia. Designed by H. K. Miller and G. Bennett of the Government Aircraft Factory, Fishermen's Bend, the new two-seater is known as the Millicer Air Tourer and will be built by East-West Airlines of Tamworth, N.S.W., who have acquired sole manufacturing, distributing and export rights. Selling price of the Air Tourer, it is hoped, will be under £2,400, and the machine will be powered by any one of three engines of 65-115 h.p., giving an economic cruising speed of 105-125 m.p.h.

REASONS FOR ROADABLES

THE submission that "the personal plane can negate the inevitability of war by giving us a national strength no aggressor may challenge" and a chapter headed *Meeting the Russian Threat with the Roadable Plane* are among the many surprises awaiting readers of *An Airplane in Every Garage*, a recent U.S. book written by Daniel R. Zuck and published by Vantage Press, New York, at $4.50. The author is designer of the Plane-Mobile of 1946—a project abandoned in 1947—and the book is an account of his personal philosophy of roadable aircraft.

This philosophy reaches a good deal further than that of most proponents of the roadable aircraft concept. Instead of driving from home to Airport A, flying to Airport B and driving from there to the destination, the suggestion is for roadside airstrips and, eventually, "downtown air-traffic freeways" cutting through city centres and on which the roadable aircraft would land and take-off, completing its road journey via side-streets. Instead of being simply a convenient means of transport, the roadable aircraft would permit long-distance commuting, which would permit decentralization of U.S. business, industrial and residential areas, which would result in fewer concentrated targets for Russian H-bombs, and hence (claims the author) "ease and greatly increased speed of personal transportation becomes the key to our national survival."

Turning from U.S. national survival, the author puts forward other reasons—some good, some not-so-good—as to why his country should "get the automobile off the road and give it wings." One reason is that it is better to park your airplane in front of your house rather than away in a hangar at the airport, because it will give you a feeling of superiority and importance in your neighbourhood. Your neighbours, it appears, will imitate you in no time at all by owning newer, more expensive and later-model autoplanes. A challenge is answered, an ego is flattered. Does not the television aerial on your roof immediately identify you as being progressive? Well then, so will the autoplane.

The Plane-Mobile, it is emphasized, is "an airplane that travels on the road," not "an automobile that flies." Its "revolutionary features" include "folding wings, steerable front wheels, landing-approach angle control independent of approach-speed variation, a limited maximum driving speed and a limited maximum diving angle, non-stalling, non-spinning and smooth-riding in rough air." The wing is mounted freely on a horizontal hinge, and control is by means of combined aileron/elevators known as ailerators.

Other examples of roadable aircraft, the T. P. Hall Flying Automobile, the Airphibian and the Aerocar, are mentioned briefly, and developments of the Plane-Mobile are described. The two concluding chapters describe the commuting habits of a hypothetical family in 1960 (the caption to a map illustration reads: *Beyond a 70-mile radius from Los Angeles lies safety in case of an H-bomb attack on the city. A roadable plane would cover the distance to safety in 30 minutes*); and a hypothetical, 7,000-mile, two-week vacation taken by the same family in 1963.

The subject of roadable aircraft is a fascinating one, and this is a fascinating book, although more space could have been spared for designs other than those of the author. Daniel Zuck's ideas are well worth reading, and are rarely dull. But he must excuse some of us who doubt that personal light aircraft (even if roadable) can bring world peace—or, indeed, that television aerials *ipso facto* imply progress.

K. T. O.

Stanley Spooner—founder-editor of "Flight"—portrayed a few years before his death in 1940

An Historical Outline of "Flight's" Progress Over the Years, Marking our Golden Jubilee

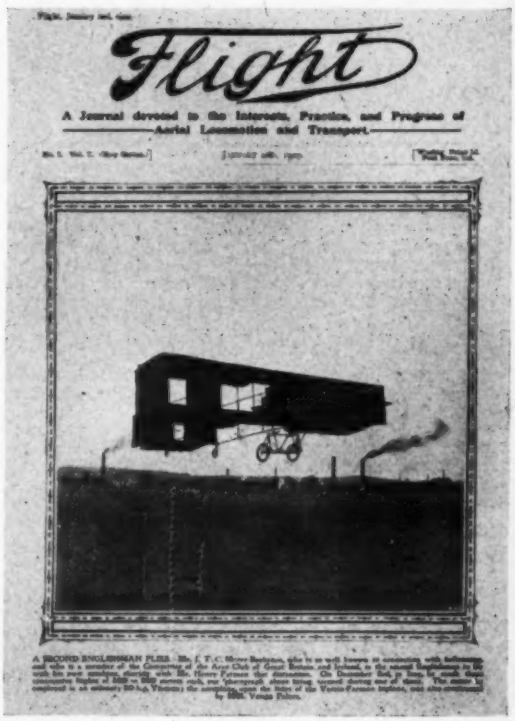
NOW WE ARE FIFTY

ON this day fifty years ago—January 2, 1909—the first issue of *Flight* was published. Strictly speaking, it was not the very first issue to be prepared: in order to establish copyright, certain pages of *The Automotor Journal*, which had formerly been dealing with aeronautics as a side-line, were bound up in *Flight* covers and deposited at the British Museum. But that is a mere technicality of publishing.

Our founder was Stanley Spooner, who died in 1940, and his first leader showed that he was a man who knew what he was about. He wrote:—

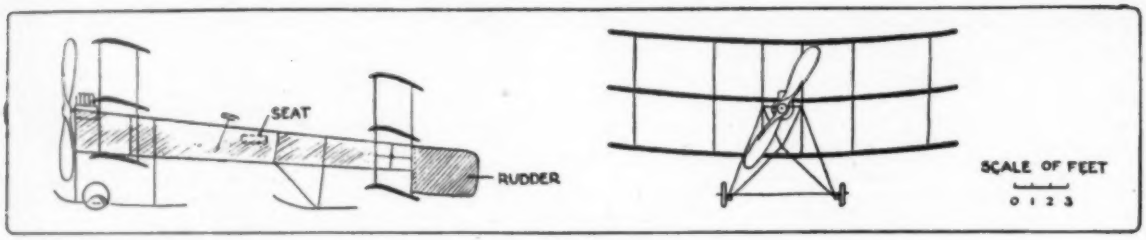
"It is not as a youthful stranger—entirely unknown to the aeronautic world—that we seek to introduce ourselves to everyone who is taking a special interest in mechanical flight; but rather is it as the dutiful offspring of a journal, which has for long earned

On the left, below, is the front cover of the first of a few issues published during 1908 to establish copyright. The contents were pages of "The Automotor Journal" dealing with aeronautics. The second picture shows the frontispiece of the first issue available to the public, dated January 2, 1909. Illustrated is one of Lord Brabazon's earliest flights, at Issy



On the left is the frontispiece of the issue dated January 1, 1910, wherein the present form of "Flight" facsimile title was used for the first time. The second picture shows our first pictorial cover—that of the Olympia Show issue dated July 11, 1929. Last is the cover of our 21st birthday number (January 3, 1930). Below are our 1910 drawings of the Avro Triplane (the "Avroplane" as it was then known) with a detail of a recent "Flight" cut-away drawing of the de Havilland Comet. Since the early 1930s such drawings have won world-wide acclaim

THE AVROPLANE.



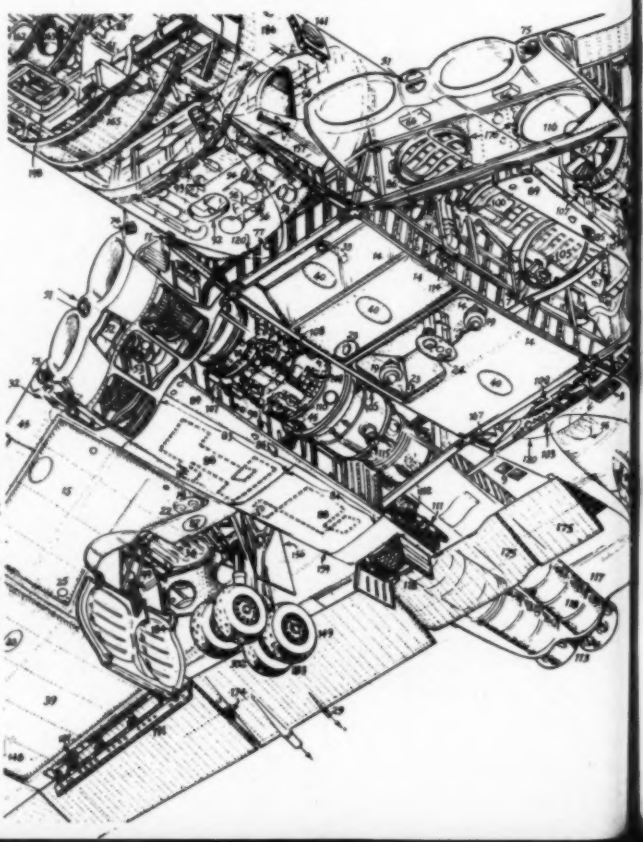
NOW WE ARE FIFTY . . .

the esteem of the same public, that we hope to make a successful appeal for *Flight* today. Up to the present time, when our own advent upon the scenes has synchronised almost exactly with the birth of a new era for humanity—the flying age—the pre-natal interests of the great industry, which is, from now onwards, to be our special charge, have been cared for, and the way prepared, by *The Automotor Journal*. That parent journal has for many years assiduously chronicled all the early stages which have of late culminated so satisfactorily in the conquest of the air. But it now devolves on us, as a newcomer, to take up the running in columns of our own . . .

"A word or two should, perhaps, be said about the scope of *Flight*, particularly in view of the still-simmering distinctions which are apt to be drawn between 'lighter-than-air' and 'heavier-than-air' advocates. Primarily, of course, everyone's attention is chiefly concentrated nowadays on the motor-driven aeroplane, or on other types of machine which similarly need no gas-bag; but, for all that, it would be absurd for *Flight* to neglect the airship, the kite, or our old friend the spherical balloon. *Anything* which tends towards progress in aerial navigation, whether by direct achievement or by the indirect method of lessons learnt, essentially comes within our immediate purview.

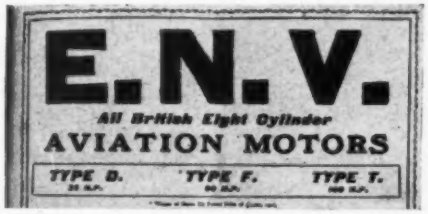
"Also it is our pleasure to announce that *Flight* starts its career as the official organ of the Aero Club of the United Kingdom . . .

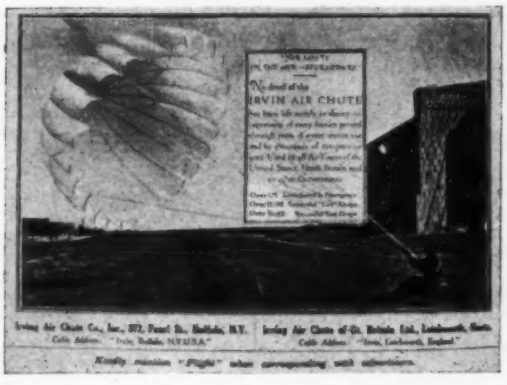
"The flying world is about to grow up; we are preparing to grow up with it; we wish our readers to grow up with us; and we intend to afford them every facility to acquire that knowledge which is so vital to them. At present, it must be remembered, no one knows very much about the subject; while even the men who have flown may be numbered on the fingers of one's hands. Now, therefore, it is the time to learn with the rest." [*Contd. on p. 15*



NOW WE ARE FIFTY . . .

A picture on page 13 shows the frontispiece of the first issue, depicting one of the first flights by Mr. J. T. C. Moore-Brabazon (now Lord Brabazon of Tara) at Issy, on a Voisin biplane. It was Lord Brabazon who, on the occasion of our 21st anniversary, recalled that he had first met Mr. Spooner in 1904 on the committee of the Automobile Club. Mr. Spooner, he said, would regard the committee with a benevolent smile but under the table would kick his (Moore-Brabazon's) leg.





NOW WE ARE FIFTY . . .

He next met Mr. Spooner in the old *Flight* office in St. Martin's Lane, which he describes as one of the most extraordinary he had ever seen. It was more like a huge pantomime wastepaper basket, he said, in the middle of which sat Mr. Spooner, looking for all the world like a large old hen hatching the egg of aviation.

Lord Brabazon's interest has ever been a lively one, and our first issue carried a letter from him declaring, "I believe the time has come when you should slightly alter the name of your paper to include aeronautics." Our very first "Corres." was from the great F. W. Lanchester, dissenting from the use of the word "aerodrome" to describe an open space for flying. "With all respect" the editor disagreed.

Something in the nature of a progress report was a leader in our issue of December 27, 1928, entitled "Twenty Years of *Flight*." The following is an extract: "For a number of years we had a lean time of it. The aircraft industry was diminutive, if, indeed, it could be called an industry at all, and its members were possessed of far more enthusiasm than cash. However, we all worked together for the common good. Those early experimenters who could do so supported us with an occasional advertisement. Those who could not, gave us at any rate their moral support, which, if it did not pay our printers' bills, at least encouraged us to carry on with

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ALUMINIUM
SAND AND DIE CASTINGS
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VICEROY'S CUP AIR RACE
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FOR STRENGTH WITH LIGHTNESS
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FOUR 200 H.P. GIPSY SIX
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NOW WE ARE FIFTY . . .

the good work. And in the end our faith in the future of flying has been justified. The British Aircraft Industry is, if not overwhelmed with wealth, at least firmly established, and even the most sceptical will hardly deny that aviation has before it a future of such magnitude that it cannot be assessed at the present time."

The first technical editor was A. E. Berriman, who left during 1913 to take up the post of chief engineer to the Daimler company. His book *Aviation* is a classic. He was succeeded by Graham Clarke, and, during the war, by C. M. Poulsen, who retained the post until 1934, when he was appointed editor. Mr. Poulsen's editorial appointment (he had joined *Flight* in 1911) coincided with the acquisition of the journal by Iliffe and Sons, Ltd., and with the transference of premises from Great Queen Street, off Kingsway, to Dorset House, Stamford Street, Blackfriars. For several years prior to our acquisition by the house of Iliffe the late G. Geoffrey Smith had acted as adviser to Mr. Spooner. Mr. Smith was our managing editor from 1934 until his death in 1951.

On Mr. Poulsen's retirement in 1949 Maurice A. Smith, D.F.C., son of Geoffrey Smith, took over the editorship; and a year ago it was announced that H. F. King, M.B.E., had been appointed editor, having for two years carried a large share of responsibility and undertaken the day-to-day work involved in editing the journal. He joined the staff in 1930. At the same time Maurice Smith became editor-in-chief, in which position he retains a close interest in editorial matters and is responsible for policy under A. B. Bourne, C.I.Mech.E.,

VOKES

1940

AIRCRAFT IN WHICH WE SERVE
ALVIS
Leonides
The Leonides 500 h.p. Helicopter Power Plant
will provide the lift for the
new "Bristol" Type 171 Mk. 11
ALVIS LIMITED COVENTRY

NOW WE ARE FIFTY . . .

editorial director. For three-and-a-half years Maurice Smith has edited *Flight*'s sister journal *The Autocar*.

The technical editor of *Flight* is W. T. Gunston, and co-ordination and presentation of the contents of the journal is the responsibility of Roy Casey, production editor. General news coverage and Service aviation matters are handled by Humphrey Wynn, and C. M. Lambert specializes on the practical flying side (including our "In the Air" series) and in elec-

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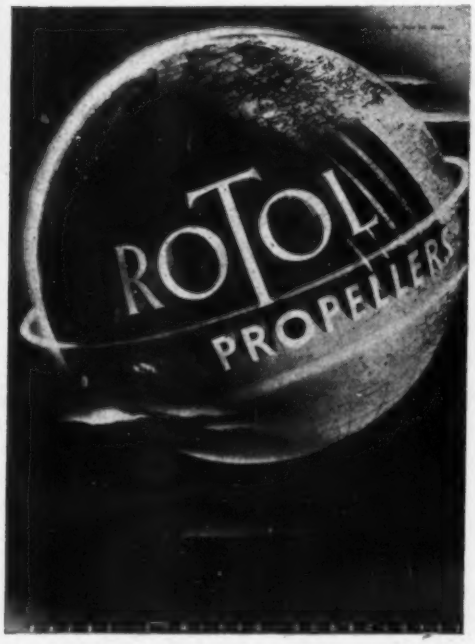
NOW WE ARE FIFTY . . .

tronics. Kenneth Owen looks after astronautics, private flying and gliding, and the members of our increasingly busy commercial-aviation team are J. M. Ramsden, A. T. Pugh and J. C. Seekings.

In an issue which features *Flight* photographs so prominently a special word about our photographic activities is called for. The name that will always be remembered in this connection is that of John Yoxall, who joined the staff in 1913 and who, on his return from the 1914-18 war, began to develop a technique of air-to-air photography which has been the acknowledged model for other specialists in this line. His predecessors were H. Randle and "Pop" Smith, Randle being credited for the very earliest *Flight* photographs and Smith for the "Hendon and Brooklands" period before 1914. About 1929 L. W. McLaren began to assist John Yoxall, and over the years assumed an increasing responsibility for air-to-air and general photographic coverage. For two years past Ian Macdonald has been similarly engaged and the work of "the two Macs" is fully as well known today as that of their chief.

Of all the Yoxall classics, those of the head-on Hawfinch and spinning Bourges (both reproduced in later pages) are probably the most remarkable. Of the Bourges J.Y. writes: ". . . an attempt was made to get a photographic impression of a spin. The trip was my first experience of flying with F. T. ('Magic Hands') Courtney—and I was never so 'demonstrated' in all my life. It was said that it took the riggers nearly a fortnight to get the Bourges right again; it was certainly some while before my own datum-line settled."

The large sectional drawings which have proved so popular are produced by several artists led by Max Millar; the names



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Lockheed POWERED FLYING CONTROLS

NOW WE ARE FIFTY . . .

of Arthur Bowbeer and Frank Munger call for special mention. (As a matter of interest, the first cut-away drawing to appear in our columns was that of a D.H. Puss Moth, in the issue of December 15, 1932. It was the copyright of our associated journal *The Motor Cycle*, which periodically apprised its readers of technical developments in other fields.

In recent years we have introduced the "Historic Military Aircraft" series by J. M. Bruce, M.A., the drawings of Leonard Bridgman, and, as a regular feature, Roger Bacon's "Straight and Level" column. Since 1949 we have operated a Miles Gemini, originally a Cirrus Minor-engined Mk 1, registered G-AFLT, and at present a Gipsy Major-powered Mk 3A, G-AKHC. This aircraft is used principally for news-coverage duties, including photography, both on behalf of our own journal and of associated *Flight* publications.

With every technical advance *Flight*'s interests and responsibilities grow broader. Missiles, astronautics, airline economics—all have an increasing claim on our attention and space. We are especially proud that *Flight* is read in every country of the world; and the present is the occasion to convey our thanks for continuing—indeed growing—support.

Adorning this review are the names of some of those companies whose announcements have appeared in our pages over the years. Other names—especially those of the great aircraft and engine constructors—figure prominently in our "Birthday Album" which begins on the next page.

SERCK

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THE NAVIGATION SYSTEM FOR THE JET AGE

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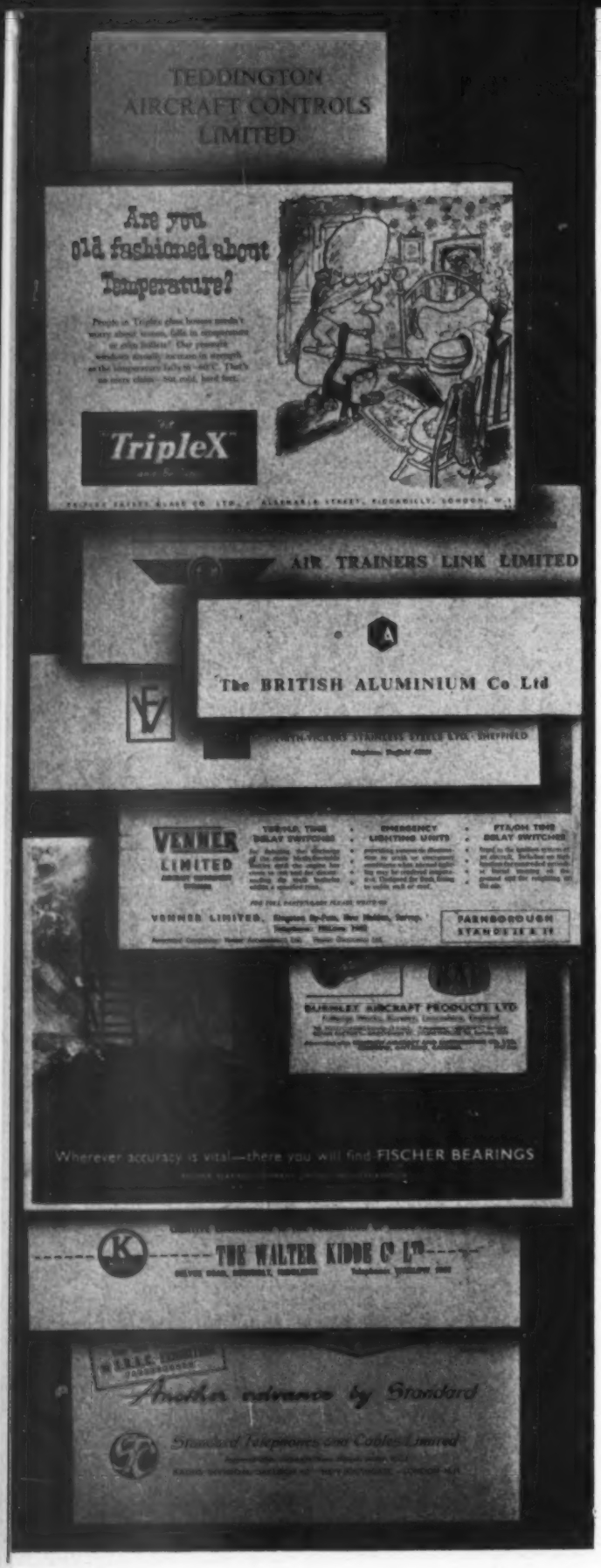

TEDDINGTON AIRCRAFT CONTROLS LIMITED
Are you old fashioned about Temperature?
TripleX
AIR TRAINERS LINK LIMITED
The BRITISH ALUMINIUM Co Ltd
VENNER LIMITED
TORQUE TUBE DRIVE SWITCHES
EMERGENCY LIGHTING UNITS
PTA/DM TUBE DRIVE SWITCHES
VENNER LIMITED
FARNBOROUGH STANDS 21 & 21
BURNLEY AIRCRAFT PRODUCTS LTD
Wherever accuracy is vital—there you will find FISCHER BEARINGS
THE WALTER KIDDE Co Ltd
Another advance by Standard
Standard Telephones and Cables Limited

THE YEARS HAVE FLOWN

A Birthday Album Compiled by the Editor

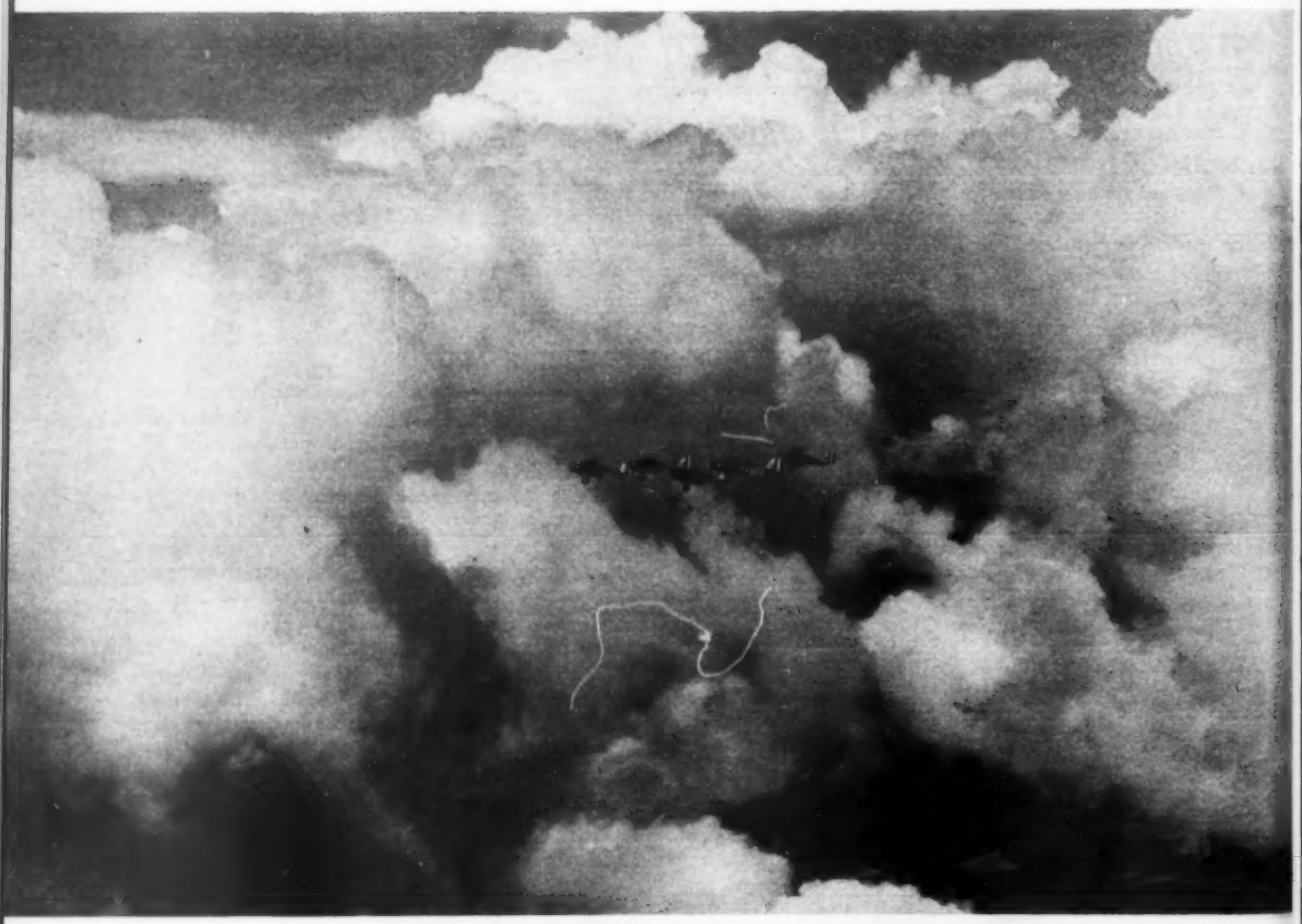
NOW that *Flight* has half-a-century behind it we may be forgiven for bringing out our birthday album; and because a birthday should be enjoyed, we shall not make it in any sense an historical document. That being so, there is no call to do epic justice to people, aeroplanes or events. We can just amuse ourselves.

All the pictures were taken by our own photographers (except one, and even that was taken with a *Flight* camera); and while we are having this preliminary preen we may present one or two unsolicited testimonials.

So far as we know *Flight* never actually flew with the Wright Brothers, though it was certainly carried in one of their aeroplanes, as our first picture shows. (The aeronaut appears to have equipped himself with *two* copies, which in those days will have set him back every penny of twopence.) The great Vedrines (centre left) was another staunch supporter and, as we see, he would not be parted from his *Flight*, even when Dame Clara Butt proffered silver (apparently with something in it, too). Sir Roy Dobson (lower left) obligingly demonstrates that to this day leaders of industry keep a copy at their elbow, if only to rest their spectacles on.

Enough for the present of "Flight" with a capital F, for the other kind has an equal appeal (we admit it)

Do you remember those cloudless, gin-clear days ?



The days when the cumulus invited a game of hide-and-seek

The North Downs seen on the blue horizon from Brooklands

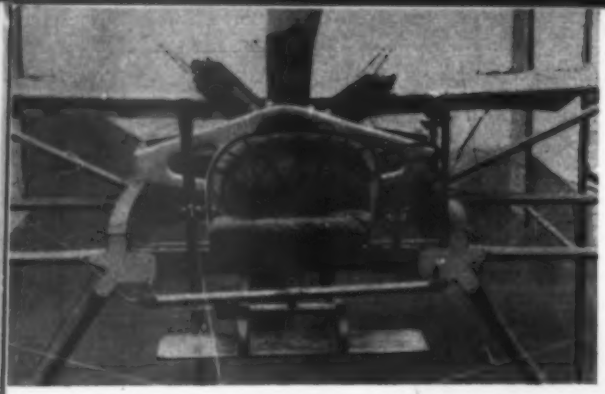
An Imlandia vista

Westland Wapiti (Bristol Jupiter) of an Auxiliary Air Force Squadron in the early thirties

Imperial Airways Short Scion (Kent Class), with four Jupiters (1931)

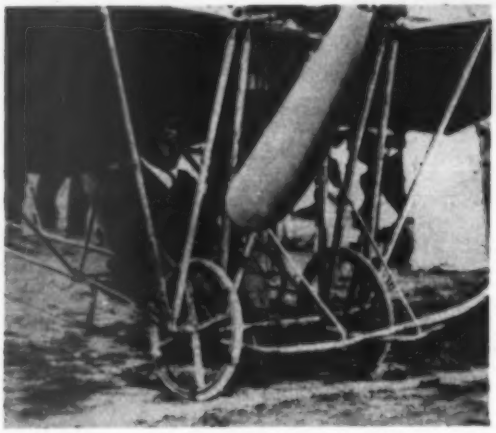
When sun and sea and cloud gave life a fresh wonder . . .

. . . and sunset came with a new magic



Down to earth, for a brief enquiry into aeronautical anthropology, wherein we discover that in early times isolationism was deep-seated. But (right) . . .

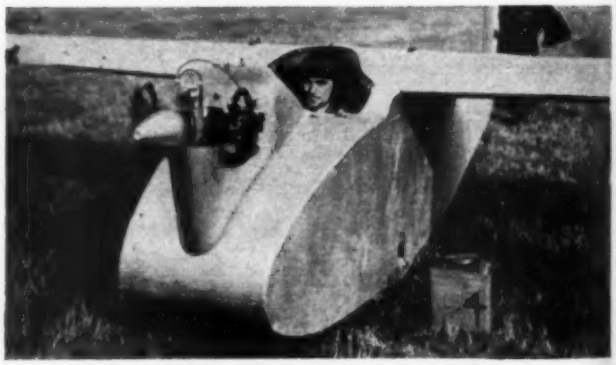
. . . a gregarious instinct developed and presently (left) . . .



. . . aeronauts began to build rude shelters . . .

. . . and pits . . .

. . . and snug little foxholes ▶



Pilot's seat, Valkyrie monoplane, 1910

Howlett and Blondeau on Henry Farman, 1911

Audemars on Demoiselle, 1910

Loughton in English Electric Wren, 1923

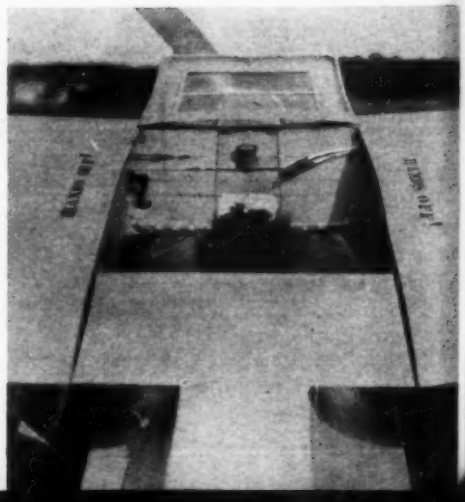
Short biplane, 1911

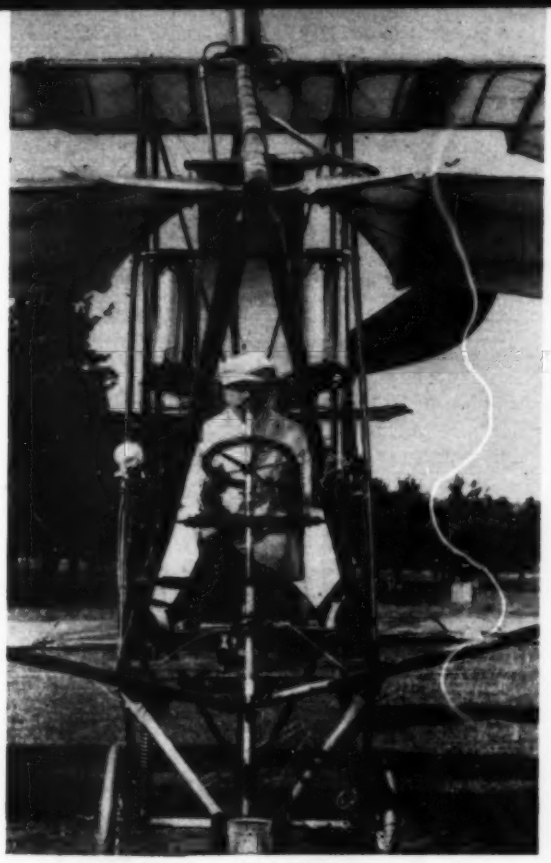
Anzo lightplane, 1923

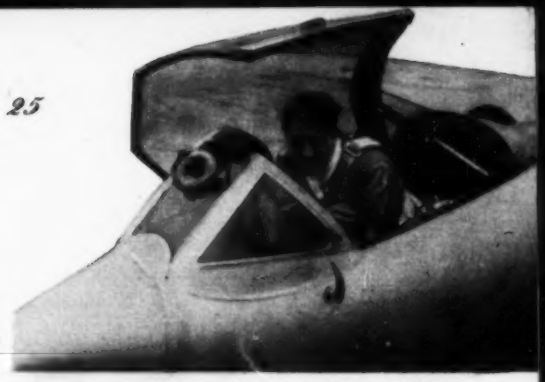
Pierrey on Beardmore Wee Bee, 1924

At length came a time when their craving for a roof over their heads began to promote a narrow outlook on life . . .

. . . even a negative one ▶

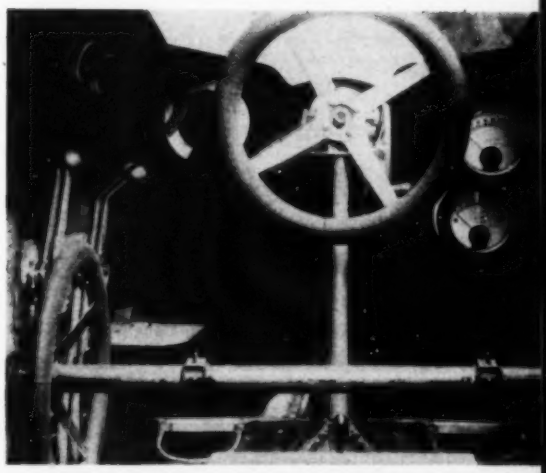




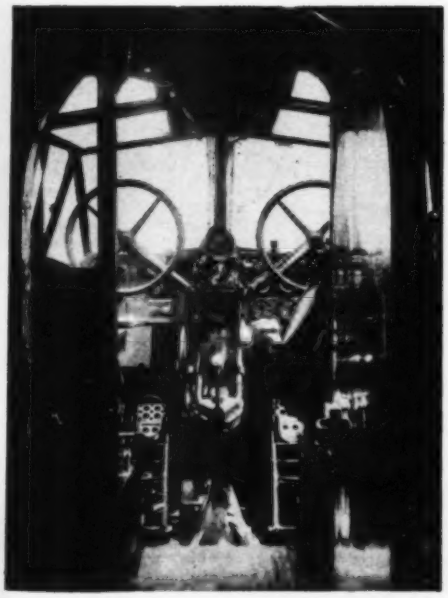


There were those who accepted their position with supine resignation

But with the invention of the wheel came a new sense of security. Here was something monolithic —something to hold on to



Not only did the wheel prove an admirable device for holding, but it could perform other important, if imperfectly understood, functions



In course of time the wheel was elevated to a position of veneration, here manifest in its full grandeur

Today, alas, we discern only the merest vestiges of a once-proud glory

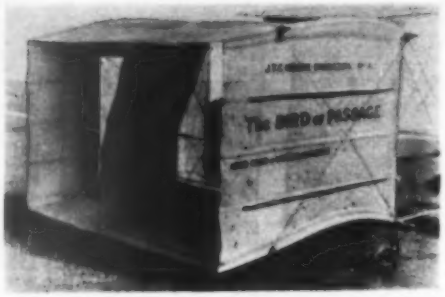
Colonel Cody in his Cathedral, 1910

Mark Lambert of "Flight" in Gloster Prone-Pilot Meteor, 1945

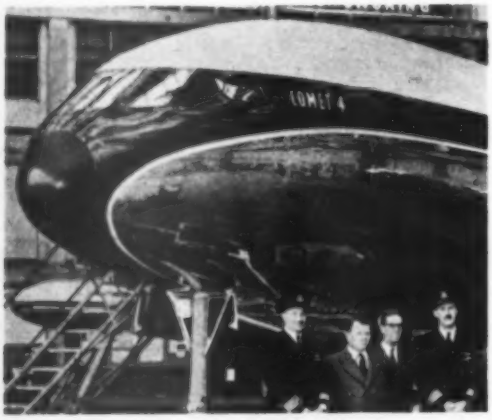
Cockpit of Bowlton Paul Atlantic, 1919

Handley Page H.P.68, 1930

Bristol Britannia, 1956

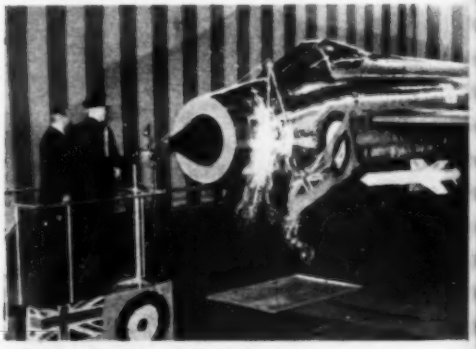


The age-old practice of conferring names upon aeroplanes . . .



Tail of Lord Brabazon's Voisin 1909	Nose of Armstrong Whitworth Atalanta 'Amalthea' 1933
Nose of de Havilland Comet 4 1958	Naming of Australian Westland Wapiti (Bristol Jupiter) 1929
Unidentified party Pre-1914	Naming of English Electric Lightning (two Rolls-Royce Avon) 1958
Hawker Hart, (R-R. Kestrel) 1934	Fairey Swordfish, (Bristol Pegasus) pictured in 1951

. . . was traditionally attended by ceremonial rites



It is to be deplored that such innocent customs often revived the old pagan practices. There were wild, hoarse cries of "Cheers!" . . .

. . . "Three rousing cheers!" . . .

. . . Till at length there followed the ultimate degradation of "Bottoms up!"

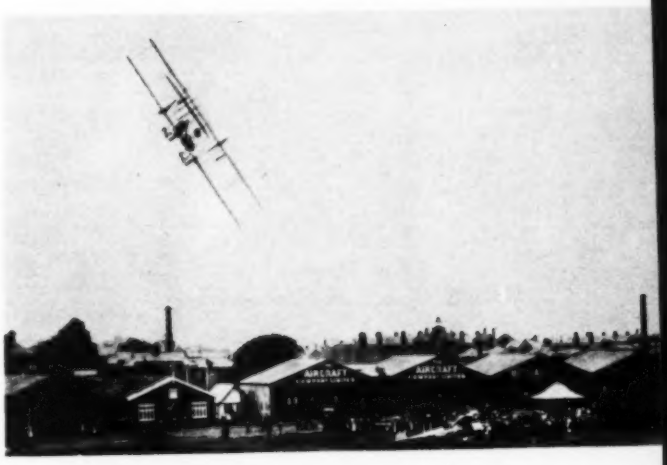
We shall not dilate on the shocking hallucinations to which such unbridled licence so often led. Fantastic shapes . . .

Handley Page Christmas card, 1927 (H.P. "Harrow")

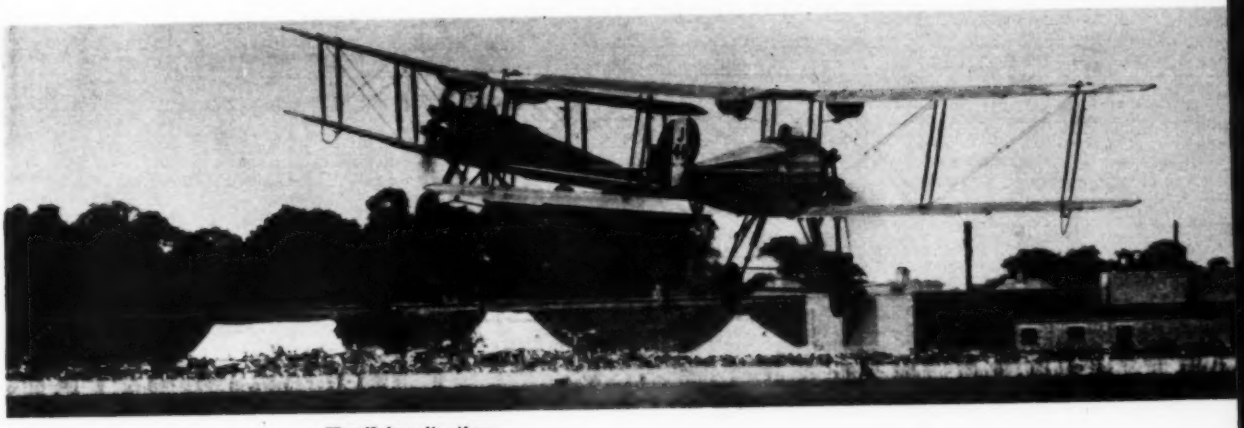
Reality on Wright biplane, Hendon

Crazy flying by Avro 504Ks at R.A.F. Display

Geoffrey Tyson pinking up handkerchief with D.H. Tiger Moth at Sir Alan Cobham's National Aviation Day

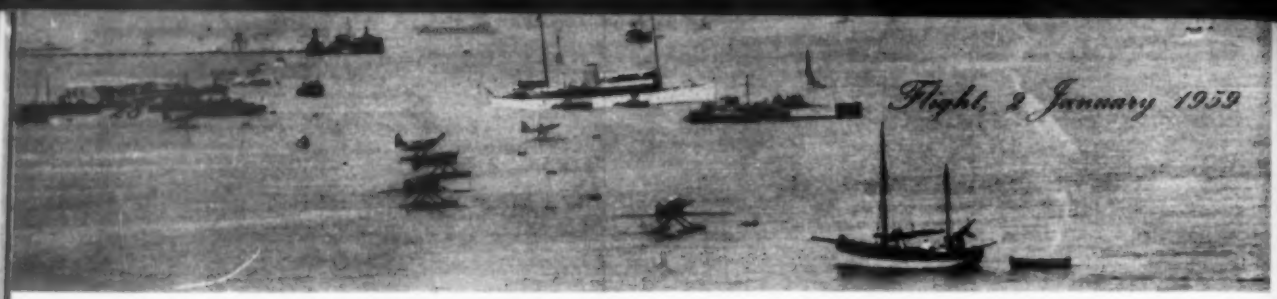


. . . and spectacles



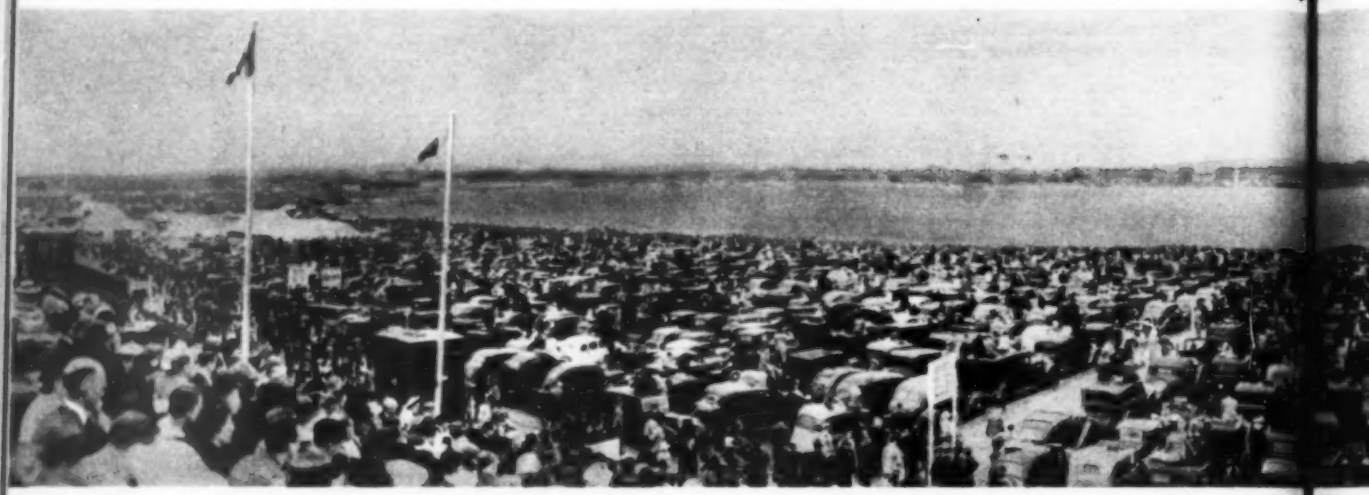
Horrifying situations . . .

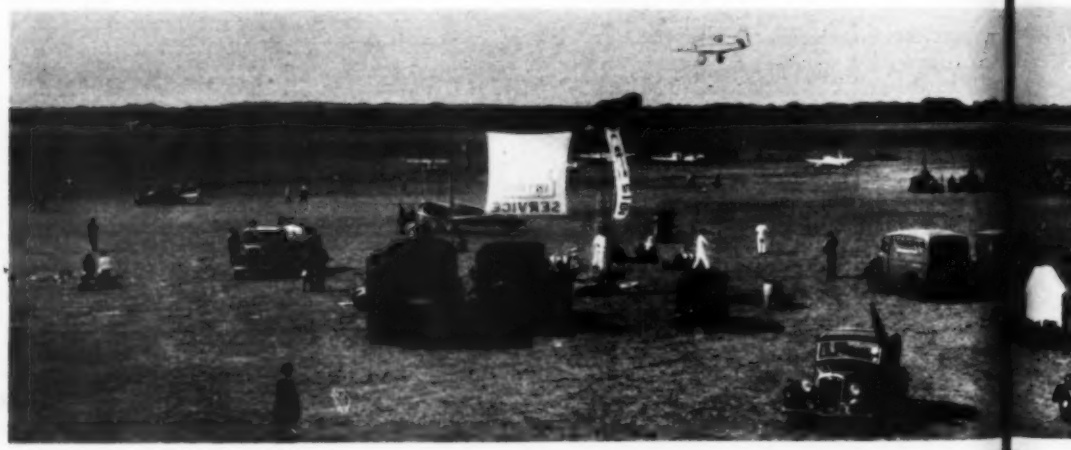
. . . and feats of flying beyond rational possibility



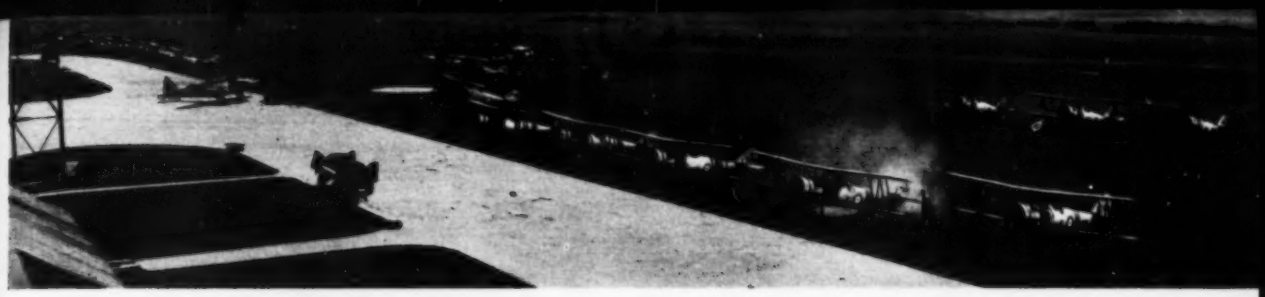
To rest the eyes and warm the heart there is nothing to compare with a glance back over the tranquil vistas of the years . . .

. . . A Schneider Trophy racing scene . . .





. . . a King's Cup race . . .



. . . a famous R.A.F. aerodrome . . .

. . . an R.A.F. Display . . .

Calshot, with Supermarine and Macchi seaplanes undergoing watertightness tests before the Schneider Trophy Race of 1929

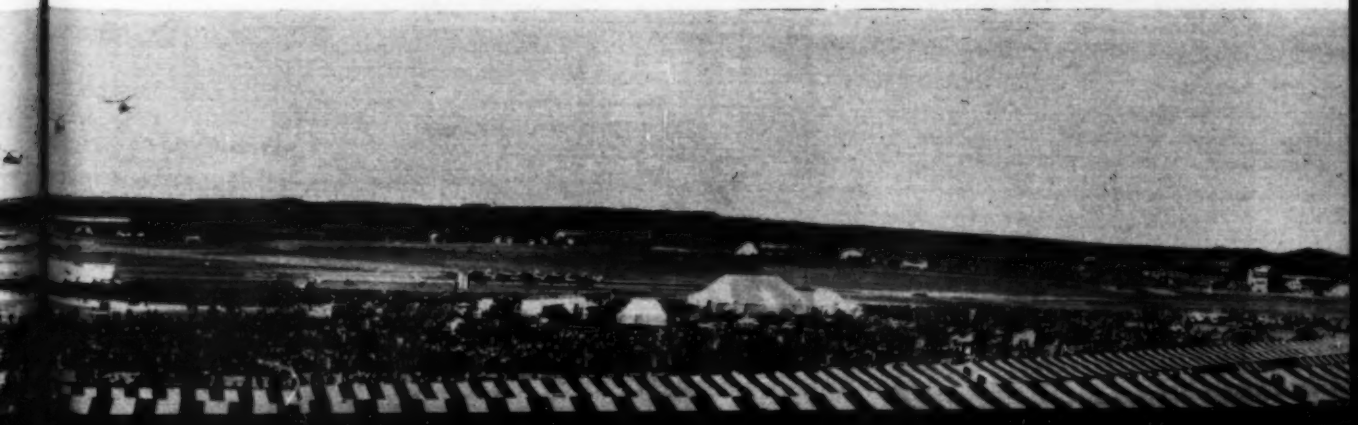
Central Flying School, Upavon, 1928, with Avro Tutors, Hawker Hart Tr and an Airspeed Oxford

Royal Air Force Display, Hendon, 1927

Hatfield, with the 1928 King's Cup Race in progress (a Percival Mew Gull is passing)

Farnborough, during last year's S.B.A.C. display, with Westland helicopters distant

. . . and an S.B.A.C. Display



A day at the races could usually be counted on for some good sport

◀ Quite often the races were interesting, too—especially when viewed from the base of a pylon at Hendon . . .

. . . or, better still, the top

Racing at Hendon at the same period

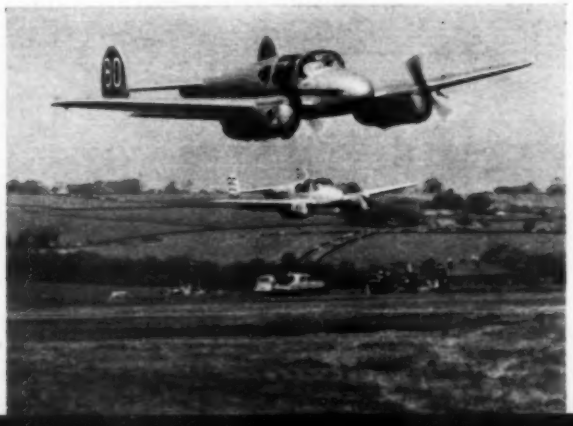
Hubert Broad in D.H. Genet Moth racing at Lympne

Snap-shot, Hendon, pre-1914

Lt. J. C. Porte, R.N., in 100 h.p. Deperdussin rounding Hendon pylon

Blamire and Somers (Miles Gemini) finishing in the Goodyear Trophy Race, 1935

Equally so from a quiet corner at Lympne . . . or Yeadon



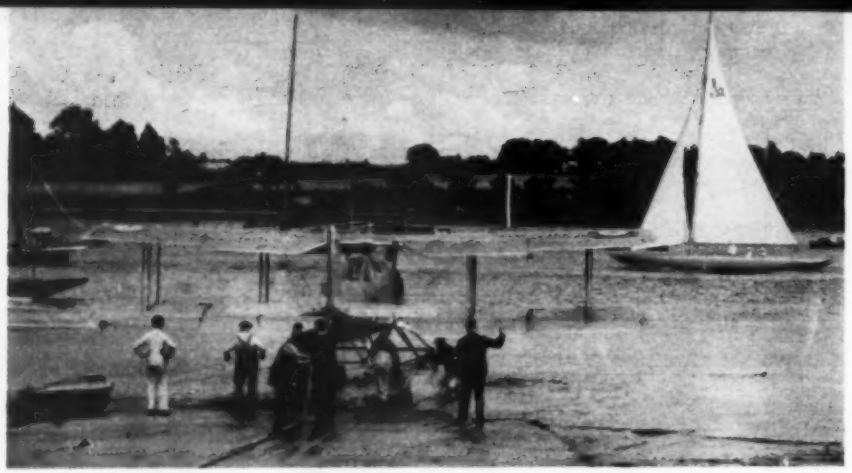
Such recherché occasions, of course, demanded the dernier cri in matters of couture . . .

. . . and voiture. ("James, my good man. Drive darling Fido over to Wisley Woods this very instant")

Fashion note from Hendon, circa 1918	Fashion note from Reading, 1923
Conveyance, Hendon, 1913	Conveyance, Brooklands, 1911
Continental Air Express, Heaulow, 1919	Continental Air Express, London Airport, 1946

In commerce, too, there were fashions in livery and delivery

Down-river for a glimpse of seaplanes and sails. White sails . . .



. . . and tan sails

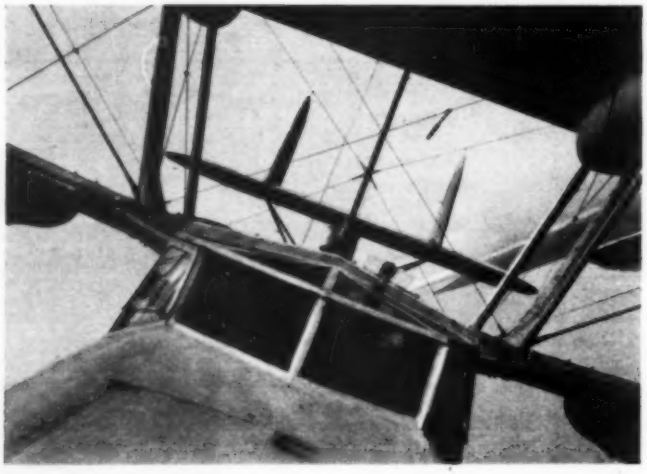
Fairey Seaplane (Napier Napier), Hamble, 1927

D.H.61 (Bristol Jupiter) on Short floats, Rochester, 1929

Supermarine Stranraer (2 Bristol Pegasus), Felixstowe, 1938

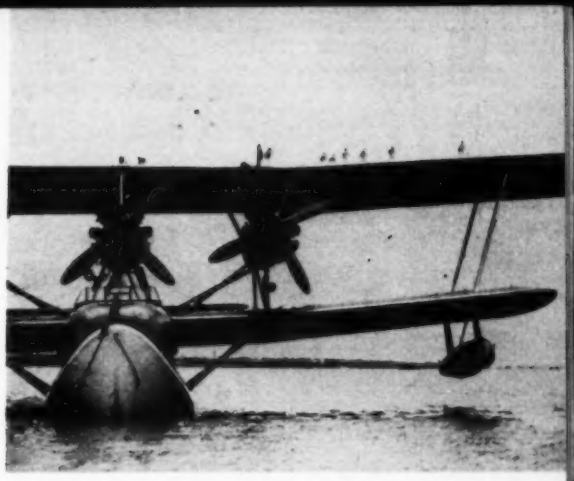
Supermarine Southampton (2 Napier Lion), Mount Batten, 1921

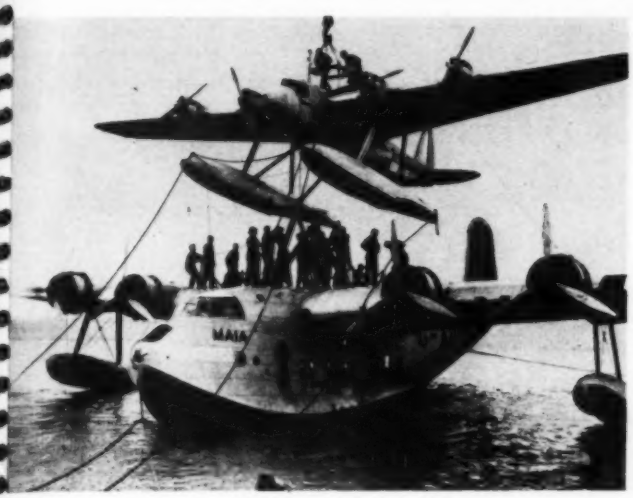
And down to the sea, with big flying-boats glimpsed astern . . .



. . . and below

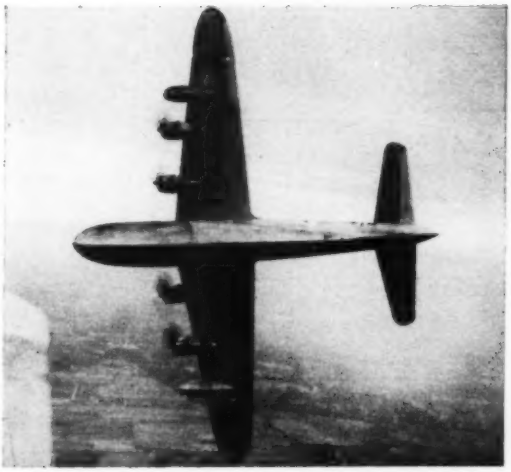
There are people who will tell you, of course, that flying-boats were, and always will be, strictly for the birds . . .





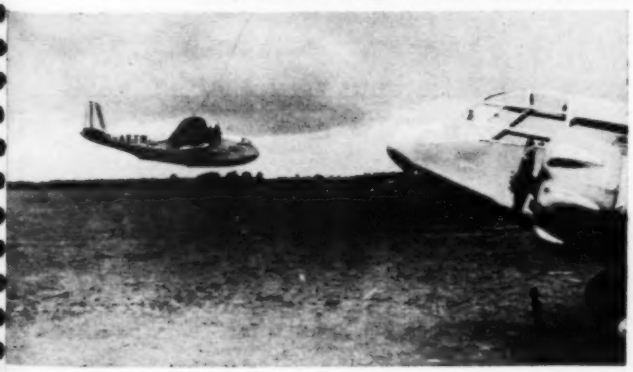
. . . or at best for other aeroplanes

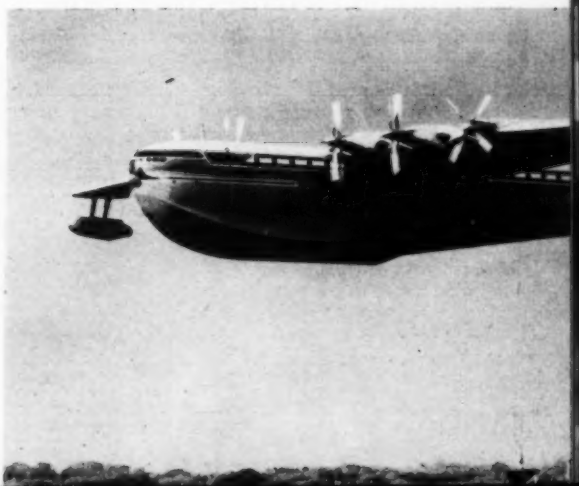
Short-Mayo Composite, 1938	Short Calcutta (3 Bristol Jupiter), 1937
Short Solent (4 Bristol Hercules), 1946	Saunders-Roe S.R./A.1 (2 Metrovick Beryl)- Farnborough, 1946
Short Empire Boat (4 Bristol Pegasus), Hatfield, 1947	Saunders-Roe Princess (10 Bristol Proteus), Farnborough, 1953

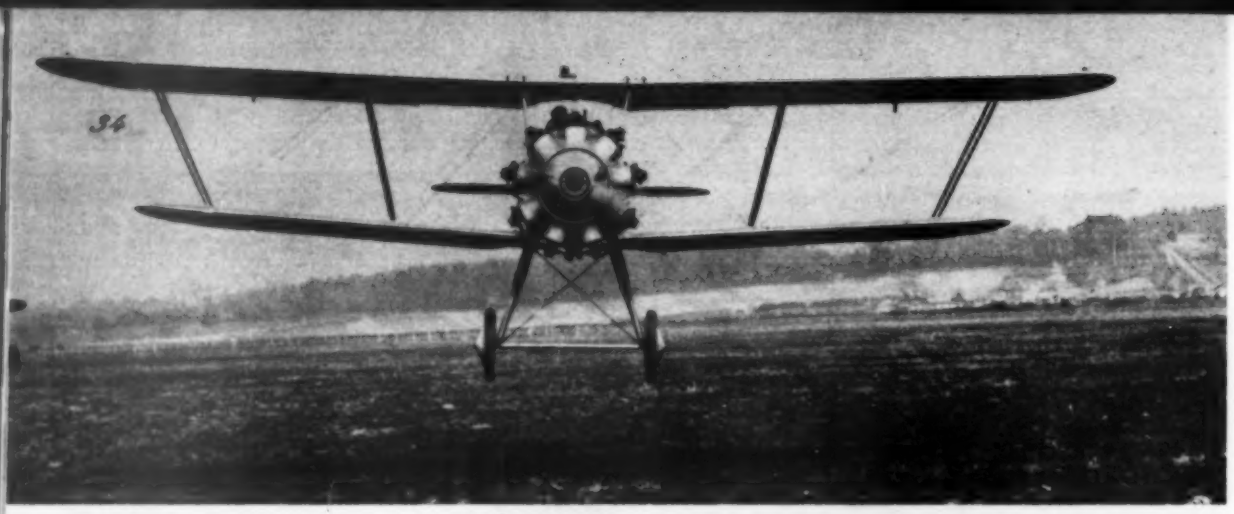


It is well known that they are not the sort of craft that can be thrown about

And naturally beat-ups are quite out of the question







The beat-up, of course, can be a perfectly straightforward affair . . .

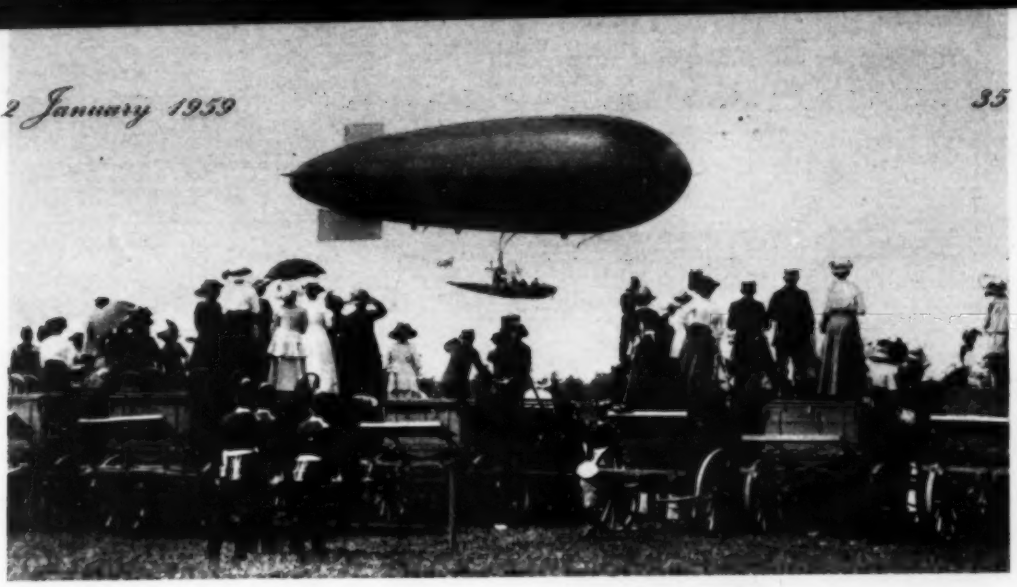
Hawker Hawfinch
(Bristol Jupiter) 1930

Hawker Hart
(Rolls-Royce Kestrel) 1929

Armstrong Whitworth A.W. XVI
(Armstrong Siddeley
Jaguar Major) 1931

. . . or it can be given a particular slant . . .

. . . or angle



It is much esteemed by the public, on fair days . . .

. . . or foul. The chief difficulty is that of getting the required . . .

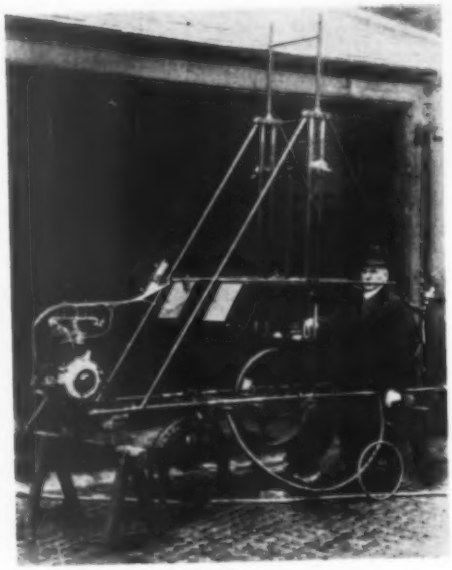
British Army Airship Gamma 1913-14

de Havilland Hornet (two Rolls-Royce Merlin)

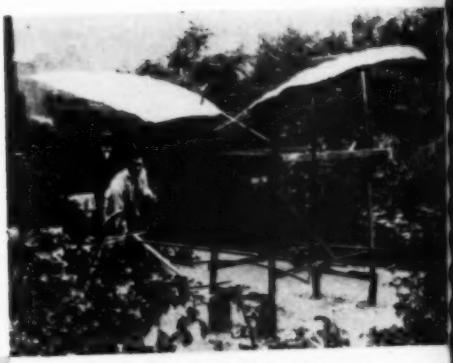
de Havilland Mosquito (two Rolls-Royce Merlin)

. . . clearance

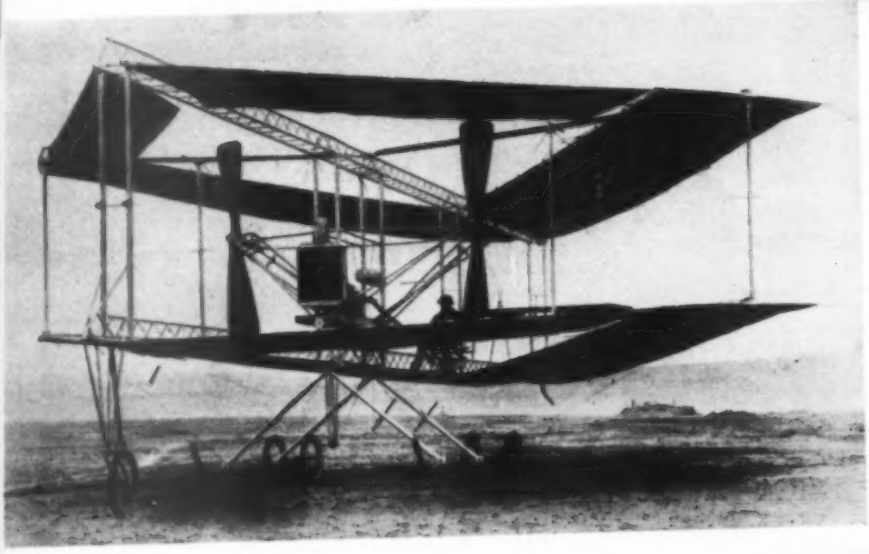
Technical progress must be viewed in perspective

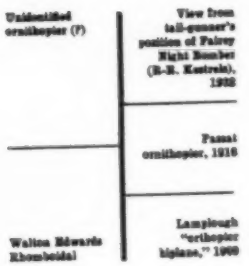


Over the years design philosophy . . .

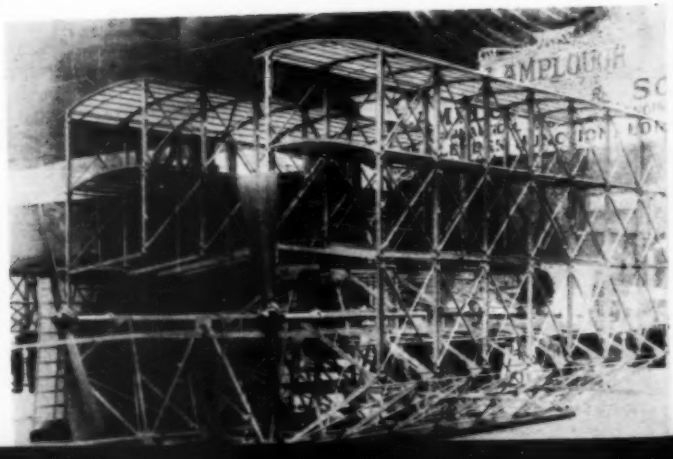


. . . and aeronautical engineering . . .




Unidentified ornithopter (?)
Walter Edwards Rhomboidal
View from tail-gunner's position of Fairey Night Bomber (R.-R. Kestrels), 1938
Pazsat ornithopter, 1916
Lamplough "ornithopter biplane," 1909

. . . have established an orderly pattern . . .

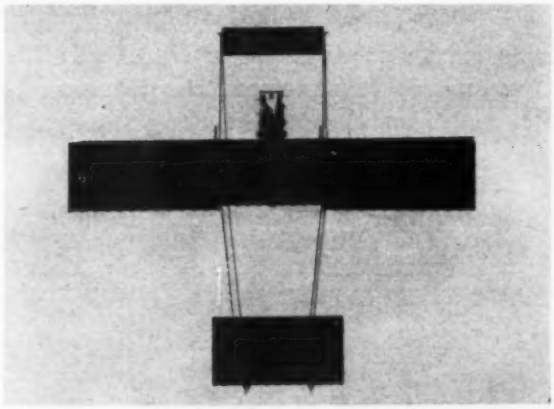


. . . of technological advance

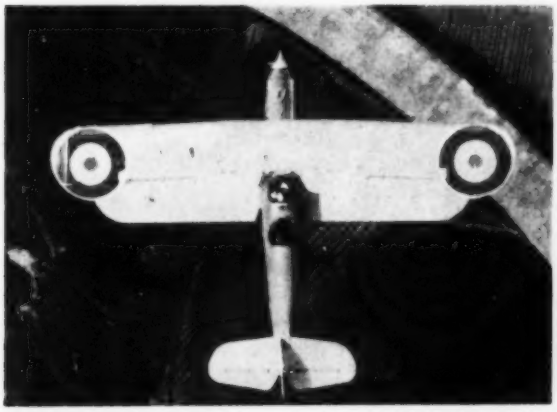
And though the shape of the aeroplane has occasionally undergone modification . . .

Unrecorded conversation	Latham's Antoinette at Brooklands, 1911
Grahame-White on Farman, 1911	Hawker Hart T (H-B. Kestrel), 1932
Fairey Battle (R-R. Merlin), 1937	English Electric P.1B, or Lightning (2 R-R. Avon), 1957

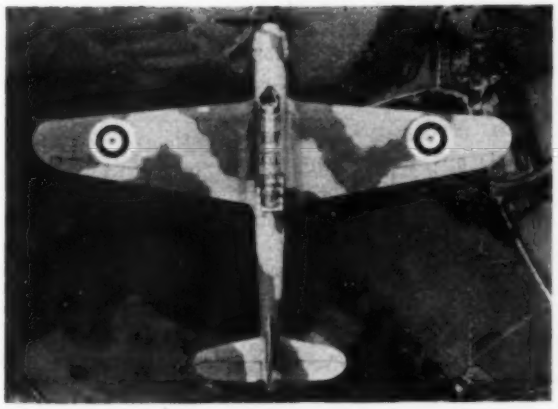
. . . nevertheless in general layout . . .



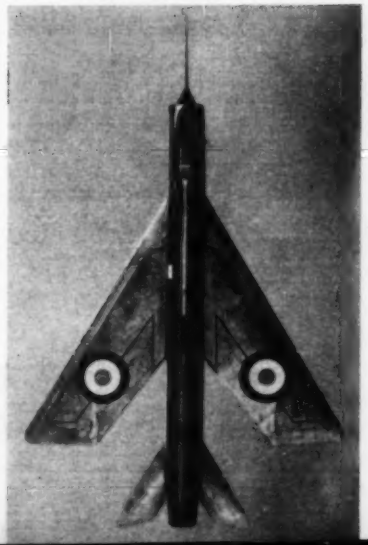
. . . there has been marked conformity . . .



. . . to pattern . . .



. . . with few sweeping changes



It is a little difficult sometimes to see exactly what is happening in formation manoeuvres when they are viewed from the ground . . .

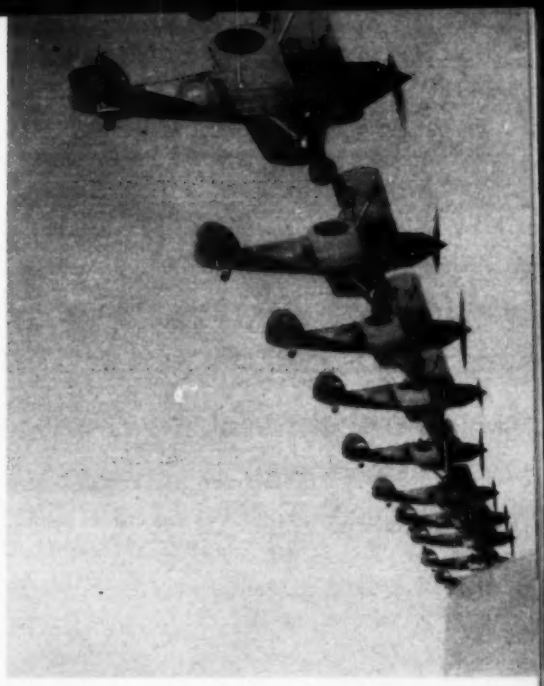
Avro Avocet (two Armstrong Siddeley Cheetah), 1928

Fairey Fawn (Napier Lion) and D.H.9As (Liberty), 1926

Gloster Gamecock (Bristol Mercury), 1926

. . . sometimes even from the air

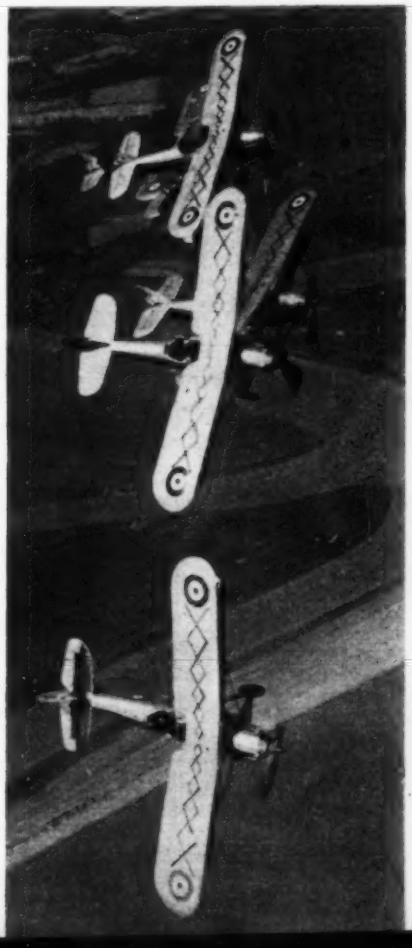
In any case, formation flying means hard, tense work, whether it's line abreast . . .



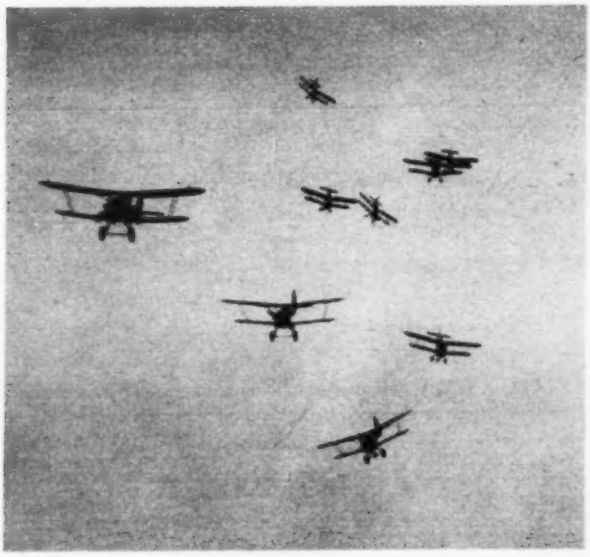
. . . or echelon

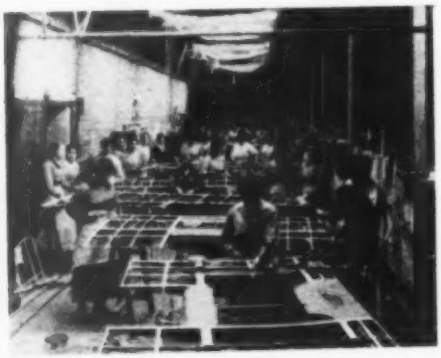
Westland Wyvern (Armstrong Siddeley Python), 1953	Hawker Furies (Rolls-Royce Kestrel), 1936
Bristol Bulldogs (Bristol Jupiter), 1936	Hawker Demons (Rolls-Royce Kestrel), 1927

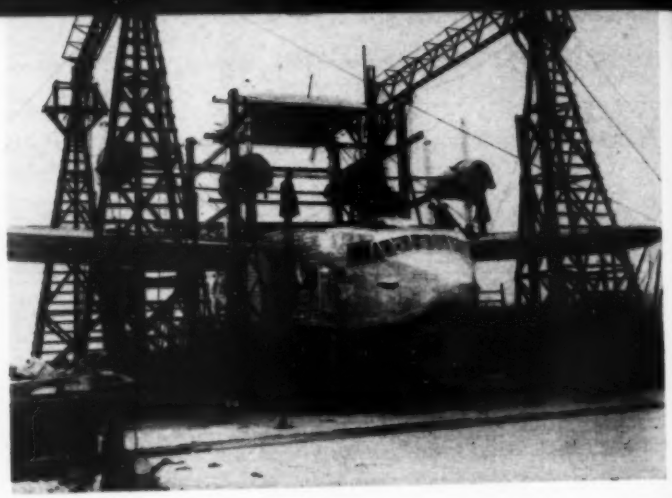
With what exquisite relief comes the break-up . . .



. . . and the beat-up

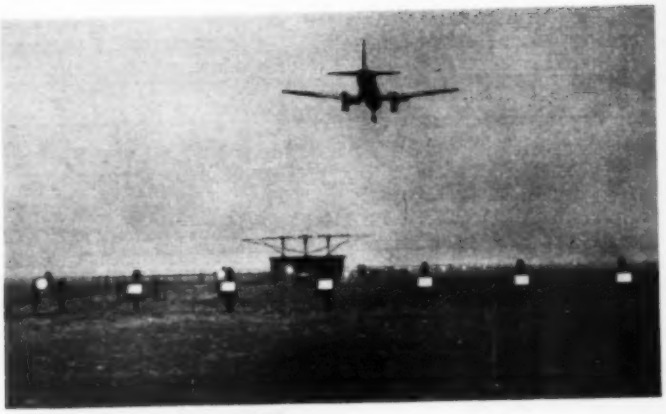






As aircraft construction took on a broader aspect . . .

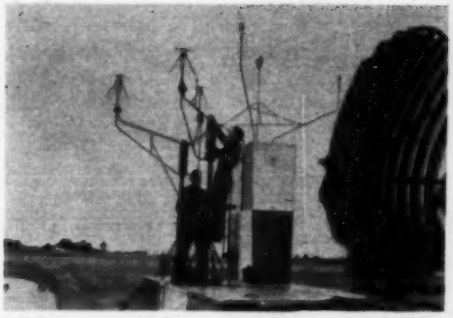
Unidentified factory, circa 1914	Erection of Short Seylin (four Bristol Jupiter) at Rochester, 1934
Approach to Shellmouth, 1910	Approach to London Airport, 1954
Fuelling Ogilvy's Baby Wright from two-gallon cans, through chamois leather, 1911	Fuelling Handley Page Victor B.1 (four Armstrong Sidderley Sapphire) from pressure bowsers, 1958
Interior of Airspeed Ferry (three D.H. Gipsy) equipped for joyriding, 1933	Interior of Handley Page H.P.42 (four Bristol Jupiter), 1931



. . . so came differing approaches . . .

. . . techniques . . .

. . . and appointments

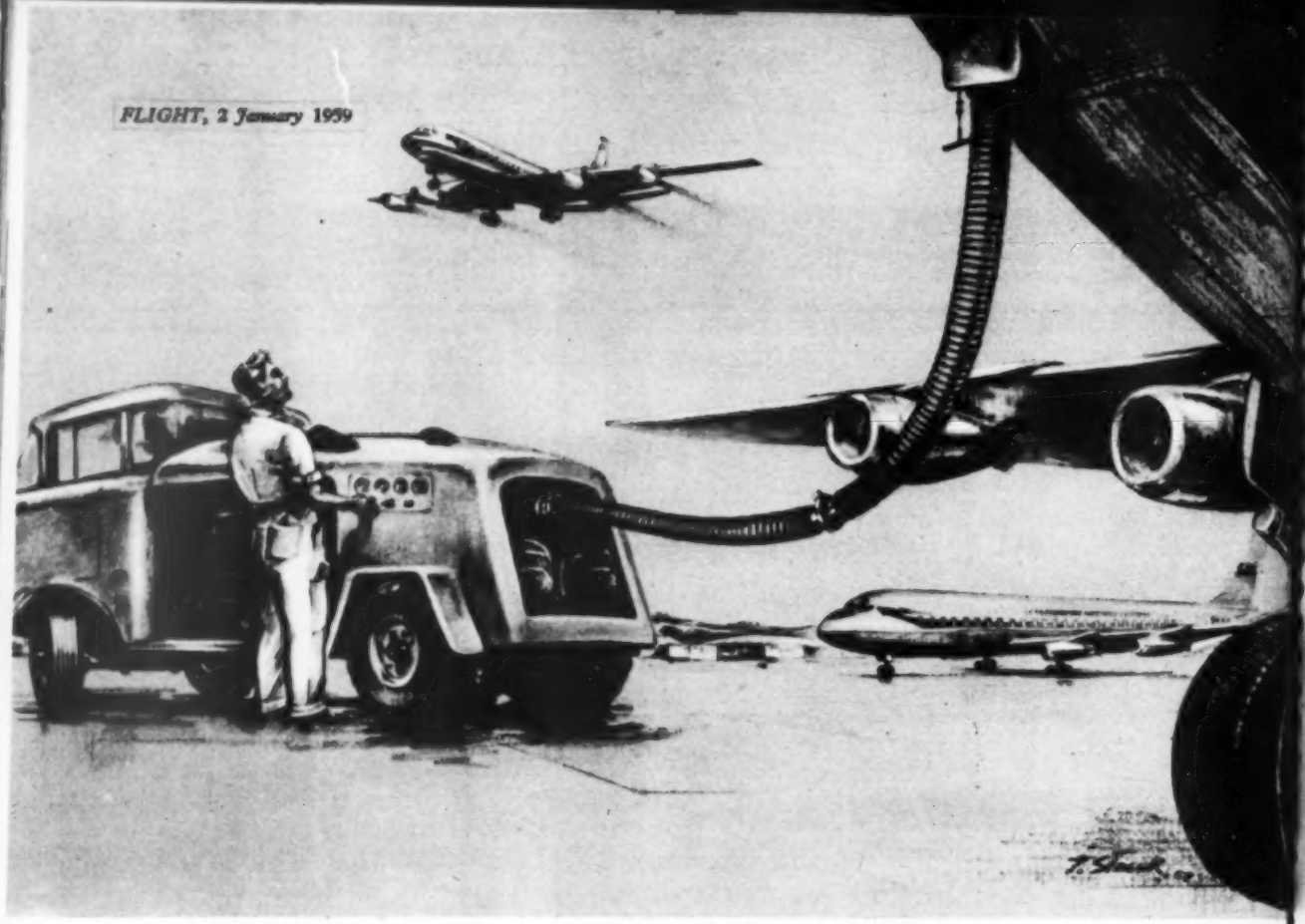


Close co-operation between ground and air, with the latest scientific equipment.

A high standard of living is enjoyed by all men and women serving overseas.

Jungle patrols in Malaya depend on the helicopters of the Far East Air Force.

The age limits for Aircrew candidates are 17½-26. Applicants should have attained a high standard in G.C.E. (or equivalent). For further information write stating your date of birth and educational qualifications to the Air Ministry, (Dept. FR-28) Adastral House London WC1.



SAS chose the 'Air Partner'

Scandinavian Airlines System will use 10 Atlas Copco 'Air Partner' compressors to service their fleet of DC-8 jet airliners

STARTING · AIR CONDITIONING · DE-ICING

The Air Partner is a surge-free rotary screw compressor of the Lysholm type designed for starting, air conditioning and de-icing all jet and turbo-prop airliners having air turbine starters.

A SUCCESSFUL COMBINATION

Atlas Copco, the world's largest organisation devoted exclusively to the manufacture of compressed air equipment, combined aeronautical expertise with compressor know-how to produce this multi-purpose unit.

STARTING

The Air Partner delivers a continuous flow of warm, oil-free air to turn the engine over constantly thus eliminating mis-starts.

AIR CONDITIONING

The Air Partner becomes an air conditioning unit by merely flicking the appropriate switches and pressing a button, a matter of seconds.

DE-ICING

A special mouthpiece attached to the air hose enables the wings and fuselage to be 'sprayed' with warm air. Removal of ice and sleet from windshields, wing leading edges, and air intake lips is achieved by using the ordinary de-icing outlets of the aircraft.

SIMPLE MAINTENANCE

The Air Partner has no wearing parts. It consists of two screw rotors which intermesh but never touch one another or the casing. 10,000 hours is the normal period between overalls for screw compressors of this type.

Maintenance operations can be carried out by airline personnel anywhere in the world or through the Atlas Copco sales and service organisation established in 90 countries.

TWO MODELS

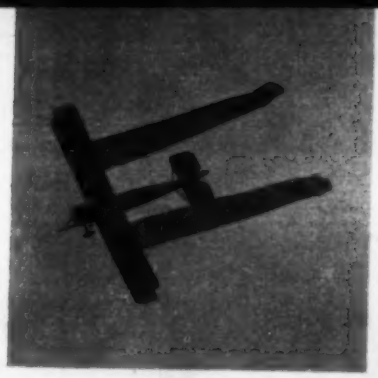
Air Partner M-3 consists of two identical units, each including a compressor connected to a standard petrol or diesel engine, for starting, air conditioning, de-icing and checking auxiliary systems. Air partner M-2 consists of one rotary screw compressor connected to a standard petrol or diesel engine for starting and limited air conditioning.

THE *Atlas Copco* AIR PARTNER

A contribution to the jet age of air travel

Contact your local Atlas Copco company or agent or write to Atlas Copco AB, Stockholm 1, Sweden

No litter in the sky, thank Heaven . . .



Just a whiff of smoke for the sake of publicity . . .

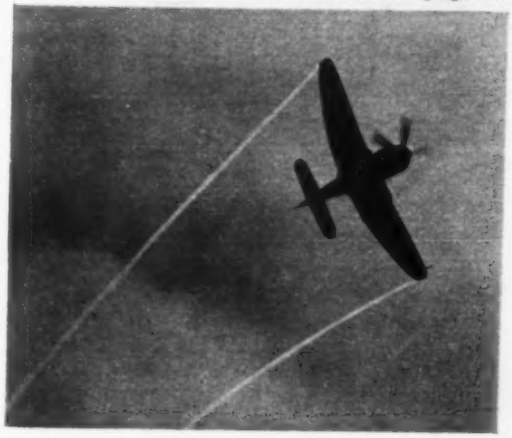
Banner-towing Avro 504K in the 1930s

Hawker (Armstrong Whitworth) Sea Hawks (Rolls-Royce Nene), of a Fleet Air Arm Squadron, 1956	Skywriting S.E.5a at practice, 1957
	Avro Vulcan B.2 (four Bristol Olympus), 1959
Hawker Sea Fury (Bristol Centaurus), 1956	Gloster Javelins (two Armstrong Siddeley Sapphire) and Hawker Hunters (Rolls-Royce Avon), 1957

. . . display or . . .

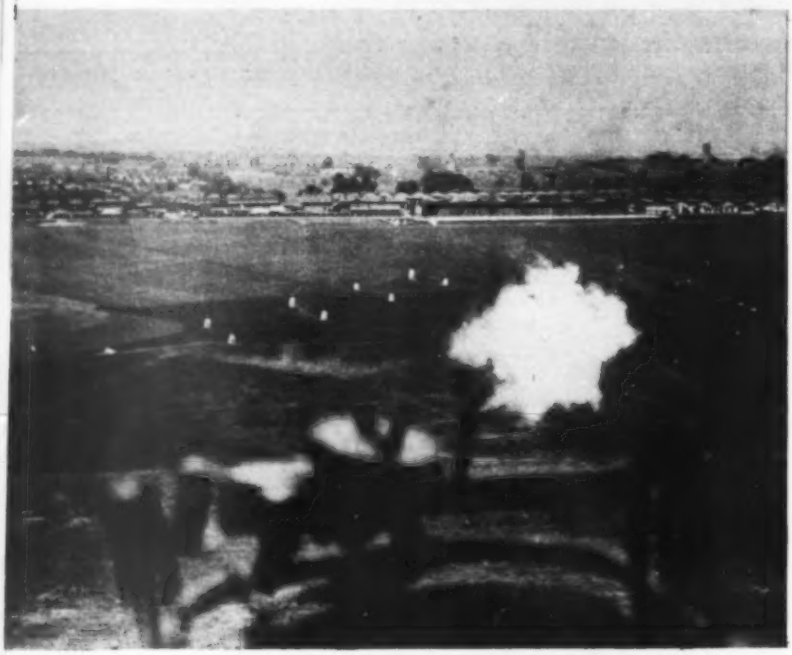
. . . combustion

And occasional contrails from wing-tips . . .



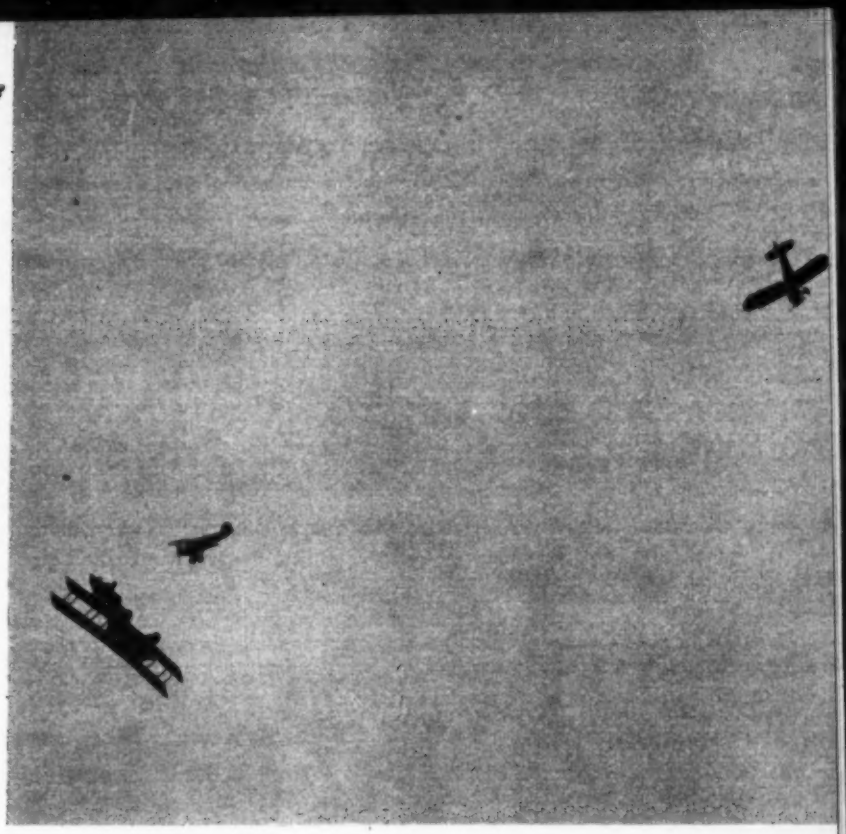
. . . and jets

To Hendon for the R.A.F. Display, under a beaming sun, with the stop-me-and-buy-ones selling out in Colindale Avenue, the heat-haze shimmying along the railway line, the buckshee viewers squatting on Mill Hill, and monster Virginias squatting on the aerodrome. And here we are, right up-front in one of those giant night bombers, along with the pilot and front gunner—all set for take-off



Airborne—and nosing in to attack. The gunner has got his head down over the bombsight, so keep an eye on that other 'Ginny over the Skywriting hangars. He managed to bag that skittle on the left and the smoke from his bomb is drifting across our bow

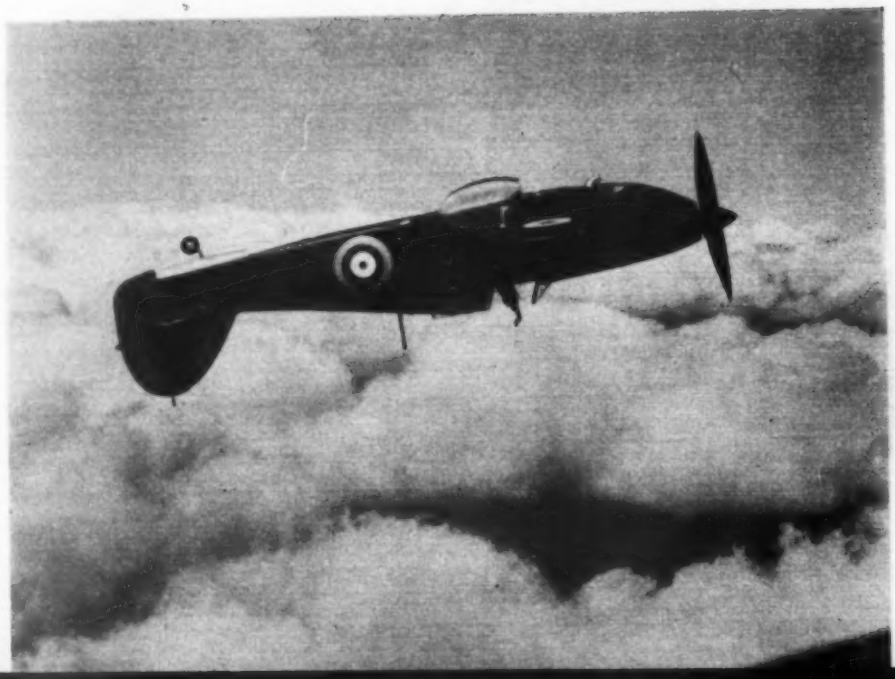
Bombs away! A break to port, and . . . Yes—we got a direct hit



On this spread we have a sequence of shots from a Vickers Virginia (two Napier Lion) taking part in the skittle-bombing event at the R.A.F. Display of 1926; a combat between a Boulton Paul Overstrand (two Bristol Pegasus) and Hawker Demons (Rolls-Royce Kestrel); and an all-time classic secured in 1919 from the mid-upper gunner's position of a Boulton Paul Bourges (two A.B.C. Dragonfly)

Did you feel a shade queasy in that turn? Then you're lucky not to find yourself in the front turret of that Overstrand up there. He's nearly as big as we are; but look at the dance he's leading those Demons. Quite an aeroplane, that. Same family as the Bourges, the Bugle and the Sidestrand. All of them were looped and rolled at Hendon here. The Bourges was even spun; and can you imagine what it was like? Well hold on to your hat . . .

After that let's just sit back and watch other people wringing out aeroplanes

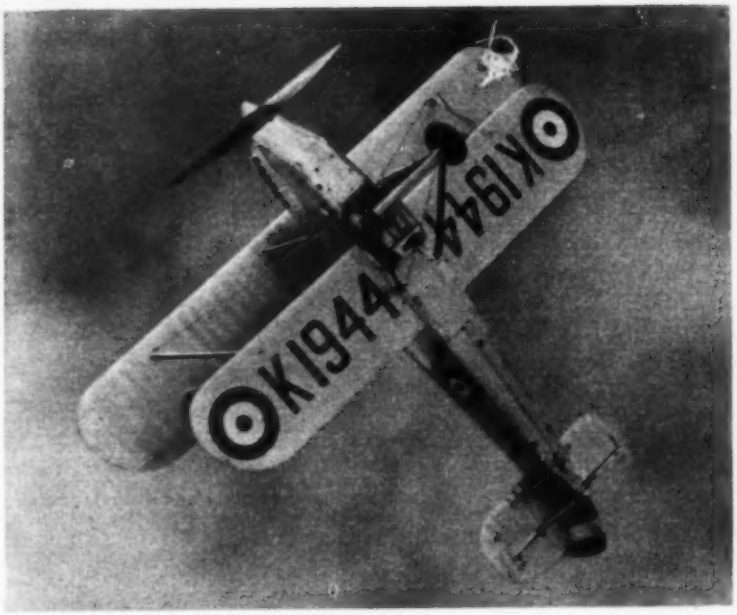


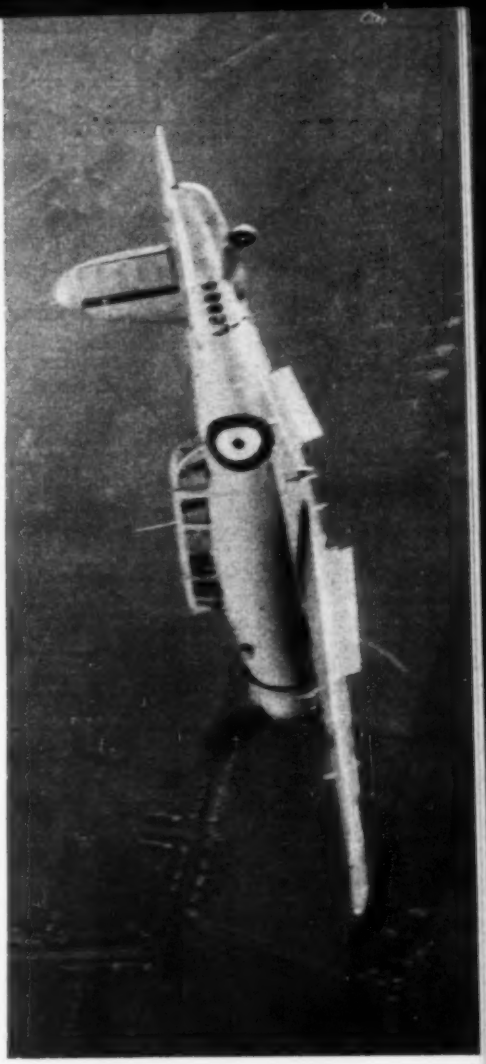
Avro 504K, 1919

Hawker Yugoslav Fury (Rolls-Royce Kestrel), 1927

Auster Aiglet Trainer, 1948

Hawker Hurricane (Rolls-Royce Merlin), 1936



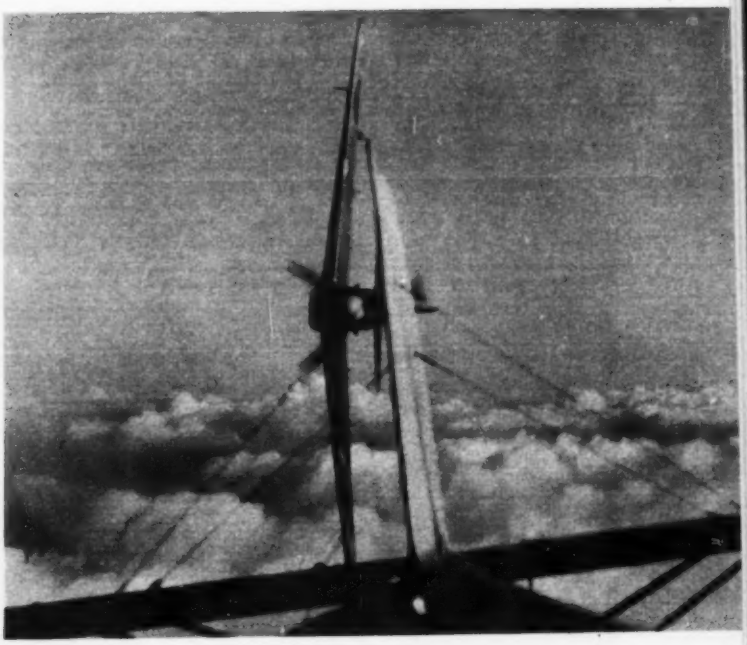


Hawker Fury (Rolls-Royce Kestrel), 1931

Blackburn Skua (Bristol Perseus), 1938

Bristol Blenheim IV (two Bristol Mercury), 1939

Fairey Fulmar (Rolls-Royce Merlin), 1941



History will not forget these fifty years. They have seen flying forge ahead in the hands of private enterprise . . .

. . . and sometimes retarded by officialdom

Running up a Blériot, about 1910

Sir Hiram Maxim in his 1910 biplane

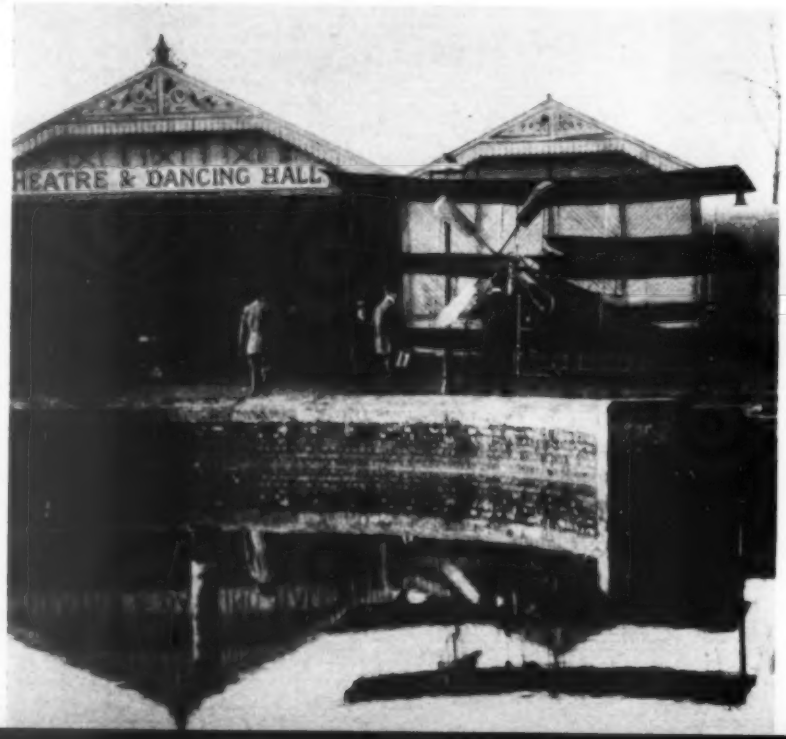
R.A.F. fighter pilots, 1920

Exit over Gatwick, 1921

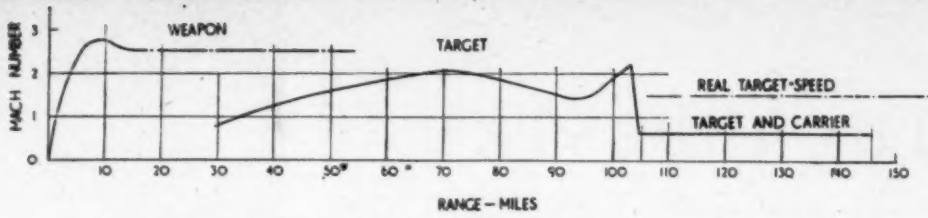
Avro Triplane at Wembley Park, 1910

There have been the quiet moments . . .

. . . and the other kind



But on reflection it has all been a lot of fun



Speed performance of a supersonic target and missile during the interception portrayed in the diagram at the foot of this page

Target Aircraft

MR. H. G. CONWAY'S LECTURE TO GUIDED FLIGHT SECTION OF THE R.Ae.S.

AT a meeting of the Guided Flight Section of the Royal Aeronautical Society in London on December 17, Mr. H. G. Conway, director and chief engineer of Short Brothers & Harland Ltd., discussed drone aircraft. He began by saying that during earlier protracted wars there had always been time to eliminate snags from weapons such as artillery and aircraft following relatively limited peace-time testing. But in future wars the ultimate attack was likely to be delivered right at the beginning and a defensive missile system therefore had to be fully ready and had to work first time. In order to make sure of this, drone aircraft were needed to reproduce as faithfully as possible the likely forms of attack before they actually arrived.

Target aircraft had three main applications, in research work, in reliability proving and in Service training. It could be presumed that in 1965 enemy attacking aircraft would have performance similar to our own and might therefore deliver long-range attacks at high speeds and heights in excess of 60,000ft. Short-range, low-level attacks might also occur. For defensive research purposes the target drone would have to be able to reproduce these. In order to prove the reliability of a missile nothing less than 200 or 300 firings of typical missiles against realistic targets under field conditions would be needed. Simulation, the speaker felt, was a dangerous alternative. Though much Service training in handling missiles could be done with dummies, periodic full-scale firings would be necessary.

Existing types of target included the small, cheap, low-performance machines; surplus manned aircraft converted to drones (Firefly 8 and 9, Meteor 15 and 16, Canberra U.10, QB-17, QF-80 and many other types); specially built, small targets of high-subsonic performance; and special, small supersonic targets. "Droned" surplus aircraft were of necessity out-of-date in performance and it was unlikely that any supersonic aircraft would be available for "droning" for some time to come. A supersonic target would therefore become necessary and its speed would rightly be largely supersonic, i.e., above Mach 1.5.

Discussing problems affecting the choice of target, Mr. Conway noted that missile interceptions at fairly low altitudes could be used to simulate high-altitude work, but that a number of problems arose in connection with the relative aerodynamic responses of target and missile, radar echoing characteristics at different heights and structural characteristics of the missile. For instance, deformation of a pointed missile radome at high altitude, affecting the tracking of its radar, could not properly be simulated at the lower heights. The size of the target was important because, for trials of components such as proximity fuzes, artificial methods of simulating radar reflection characteristics of a large aircraft were not effective in a physically small target. Target endurance was an important factor since it was convenient to be able to stand off while a missile snag was corrected and because a little time had always to be allowed for final preparations of the missile for firing. A relatively long-endurance drone such as the Canberra U.10 or a drone carried by a mother aircraft with its own long endurance were useful in this respect. The Canberra U.10 was again particularly useful in being able to achieve heights in excess of 55,000ft and in presenting a realistically large target.

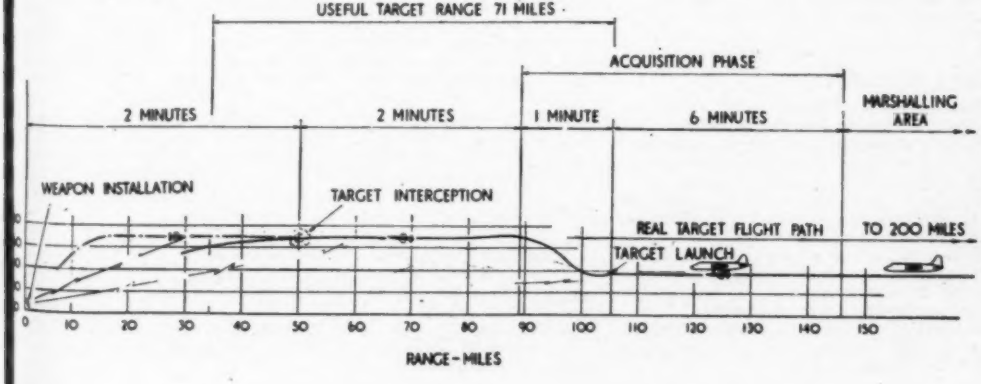
The speaker then gave some new details of the Canberra U.10 which, he said, was not a worn-out aircraft but prepared for a useful drone life of 300 hr including many piloted flights for checking ground-equipment as well as a number of target sorties in which destruction by the missile may be deliberately avoided. The U.10 carried the special B3 autopilot, developed by R.A.E. for Jindivik and other targets, and ingeniously simple Australian cameras for miss-distance indication. A speed of Mach 0.8 could be maintained at above 55,000ft with an endurance of about 3 hr. A description of the U.10 control system appeared in *Flight* for December 12, and Mr. Conway summarized the technique which, he said, was originated by R.A.E. and most effectively put into use in Australia by the R.A.A.F. He observed that although no human pilot was carried in the drone, an expert and well-co-ordinated team of three men, as well as radar tracking facilities, was required on the ground.

The B.L.E.U. automatic-landing system could be applied, but the leader cable would have to be laid over the full length of the runway and all approaches. It was perhaps simpler to employ the two human sight-operators. The American automatic landing system using a lock-on radar might be more flexible, but operated under the basic disadvantage that the radar signals were bound to suffer at close ranges near the ground, whereas optical sighting tends to improve at closer ranges.

The tone pairs which were used to modulate the V.H.F. transmission by which attitude commands were passed to the aircraft relied on a tone generator having an oscillator with a fundamental frequency of 400 c/s, suitably distorted to be rich in harmonics and producing an octave of tone harmonics of 400 c/s. Twenty-eight separate pairs were available and one of them was specially sensitive and acted as a "guard pair." During landing, several signals might have to be transmitted at once and a second tone generator was brought into operation and the receiver rapidly switched from one to the other. The relays operated by the tones were slugged so that the receiver was in effect in continuous contact with both transmitters. The autopilot itself was an Elliott Type B5A.

Firefly and Meteor drones carried a series of cameras mounted in wing-tip pods and together affording 360 deg coverage. In addition, a camera in the fuselage recorded wing deflections for calibration purposes. This combination produced accurate information but required processing of a considerable number of films and W.R.E. in Australia had developed a special camera with 180 deg field of vision. A pair of these was mounted back-to-back in a package in each wing of the Canberra U.10, pointing above and below the wing. A calibrating mirror on top of the fuselage provided an indication of wing-deflection. Radio and radar miss-distance indicators were available, but little could be said about

(*concluded on page 50*)



Time, distance and height performance of an air-launched Rocket Test Vehicle suggested by Shorts as a supersonic target system for anti-aircraft missile firings. The speeds attained during this operation are illustrated at the head of this page

THE INDUSTRY

English Electric Developments

IN their annual review of activities the English Electric Co. say that 1958 has seen them "firmly established in the field of aircraft generating systems and equipment," further substantial contracts having been received for constant-speed drives and main generating and control equipment in the V-bombers. There has also been a civil aircraft contract—from B.O.A.C.—for supplying and overhauling constant-speed alternator drives; an order for A.C. electrical equipment in the English Electric Lightning; and another for a generator for the Hunting Aircraft Jet Provost.

English Electric also state that several new lines of development have been initiated, one being an investigation of control gear without moving parts, in which transistors and transductors replace relays and carbon pile voltage regulators. An exceptionally small motor embodying the latest design techniques has been developed and is being used to power a new series of miniature rotary and linear actuators.

New Lockheed Company

IN furtherance of a policy of decentralization and expansion, Automotive Products Associated Ltd. have formed a new company, to be known as Lockheed Precision Products Ltd.

This company, with design and manufacturing facilities already available at the group's factory at Speke, Liverpool, will manufacture and sell aircraft and industrial hydraulic equipment and Lockheed-Avery hoses and couplings.

It was in 1937 that Lockheed first supplied a retractable undercarriage to a British airliner, the Armstrong Whitworth Ensign. Since then the group's equipment has been widely used on leading civil and military aircraft; for example, every control surface on the Comet 4, as well as the undercarriage, is operated hydraulically by Lockheed equipment.

This further decentralization will, it is stated, provide still better technical and manufacturing services for all users.

Mr. Martin G. Foulger has been appointed manager of the aviation products division of the Goodyear Tyre & Rubber Co. (Great Britain) Ltd. in succession to Mr. C. D. Heckman, who now becomes assistant to the managing director. Mr. Foulger, who served in the R.A.F., was formerly assistant manager of the division. He joined Goodyear in 1952 following engineering training with the de Havilland Aircraft Co. Ltd. and subsequent experience with de Havilland Propellers

Simmonds' German Subsidiary

A SUBSIDIARY company has been formed in Germany by Simmonds Aerocessories Ltd., a member of the Firth Cleveland Group. Known as Deutsche Firth Cleveland GmbH, the new concern has taken over extensive offices at Neckarauerstrasse 245-53, Mannheim (tel. Mannheim 41458, telegraphic addresses Aerocessim, Mannheim and Fircleve, Mannheim). It will undertake the marketing in Germany of most of the products of Simmonds Aerocessories and those of the Simmonds British subsidiary, Firth Cleveland Instruments Ltd.

Mr. A. A. Puth has been appointed general manager of Deutsche Firth Cleveland GmbH and is assisted by Mr. H. Seiler as Surform sales manager.

Rectifier Company Formed

IN a joint statement the International Rectifier Corporation of Los Angeles, Cal, and Lancashire Dynamo Holdings Ltd. announced recently the establishment of the International Rectifier Co. (Great Britain) Ltd., which will shortly begin the manufacture of semiconductor products in the United Kingdom.

A new 10,000 sq ft plant to be built near London is planned for the newly organized company and should be opened before the end of this year. During the interim period, International Rectifier Co. (Great Britain) Ltd. has set up an assembly-line operation for semi-manufactured products which will operate in temporary locations. Principal rectifier products to be produced in England are silicon diodes and silicon power rectifiers.

The Californian firm, which has representatives and sales offices throughout Europe and the Far East, is stated to be the largest manufacturer of metallic rectifiers in the world.

Prize for Napier apprentice Roger Clark; he is receiving it from Mr. H. G. Nelson, director, at the company's 14th annual prize-giving, reported below

Shakespeare at Acton

ADVISING Napier apprentices not to go looking for security as the only key to happiness and success, Sir Miles Thomas told them at the company's recent presentation of indentures and awards: "There's one thing alone which will give you true contentment, even though you have no real security at all; and that's self-respect." Sir Miles, who is chairman of Monsanto Chemicals but was speaking as chairman of the governors of Brunel College of Technology, quoted Polonius' advice to Laertes to reinforce this point: "To thine own self be true; and it must follow, as the night the day, thou canst not then be false to any man." He also quoted Rudyard Kipling's useful rhyme: "I keep six honest serving men (they taught me all I knew); their names are What, and Why and When, and How and Where and Who."

The Napier chief of personnel and training, Mr. J. F. A. Radford, said that apprentices in the higher grades were meeting all the company's technical needs and also some of the needs of other companies in the English Electric Group. There was every prospect that by 1960-61 the output of trained trade apprentices would also meet Napier's workshop need of manpower.

Attractive Panelling Material

SOME imaginative designs and colour combinations are to be found in the new "Mural Texturide" range of vinyl-coated fabrics for panelling and similar applications in buildings, ships and aircraft. The schemes have been worked out in consultation with Tibor Reich, F.S.I.A. These descriptions of the new designs are worthy of quotation in full as being of potential interest to airline operators:

"Osaka Grass: This design, showing the continuous intertwining of grasses, originates from grass cloth woven in the Far East; the nine colours have been carefully selected and blended to produce a natural, realistic effect. *Tongsan:* This representation of Thai Silk portrays the Eastern splendour and luxuriance of Siam; nine glittering colours. *Panama:* Tibor Reich's interpretation of the woven straw cloths of Central America in five contrasting colours. *Pettigo:* This village in Ireland, where flax is grown, gives its name to a coarse linen effect; the flax-seed husks are a characteristic feature of this cloth interpretation; in nine plain colours. *Palermo:* A realistic reproduction of Italian raffia with all the irregularities of the original; eight colours. *Madagascar:* A deep textured fabric adapted by Tibor Reich to surfaces; nine colour combinations. *Allegro:* This lively design in six gay colours is especially suitable for small areas."

The makers—Arlington Plastics Development Ltd., of Arlinghide Works, Harlow, Essex—state that the material is hard-wearing, and resistant to scuffing, gouging, burns and most stains.

IN BRIEF

An attractive new illustrated booklet on silicone rubbers has been issued by the Nobel Division of Imperial Chemical Industries Ltd.

* * *

The Pyrene Co. Ltd. have announced "with profound regret" the death recently of Mr. William Elkington Wright, F.C.S., until 1957 a director of the company, with the organization's metal finishing division as one of his chief responsibilities. He joined Pyrene nearly thirty years ago and pioneered in this country the use of phosphate coating processes on a production scale.

* * *

Chelton (Electrostatics) Ltd., of Marlow, Bucks, state that the first issue of their *Aerial News* was well received. A second issue has been published and the mailing-list is being extended. The contents consist principally of news of the company's latest developments in aircraft aerials and associated equipment, very full technical data and drawings being included.

* * *

Representatives of over fifty companies in the aircraft industry attended the fourth annual dinner and dance held by the supplies department of Folland Aircraft at the Polygon Hotel, Southampton. Principal hosts were Mr. W. E. W. Petter, managing director and chief engineer, and Mr. A. F. Rock, chief supplies officer. The chief test pilot, S/L. E. A. Tennant, and other company test-pilots were also present.

CORRESPONDENCE

The Editor of "Flight" is not necessarily in agreement with the views expressed by correspondents in these columns. The names and addresses of the writers, not for publication in detail, must in all cases accompany letters.

Value of the Ultra-light

AS a club member whose flying experience is limited, due entirely to the high cost of private flying, may I add my plea for the ultra-light aeroplane?

A machine such as the Druine Turbulent or the Luton Minor can be flown for about one-third of the hourly cost of the more accepted types of club aircraft and, having been privileged to fly both these types of aircraft, I would like to dispel any belief that these little machines are purely the poor man's nearest step to flying. For too long they have been the object of amusement and often derision. I admit that I myself have been guilty of dubbing them "puddle-jumpers" but have since realized that they are more than worthy of a place in our private aviation.

As your leading article [December 5] hinted, I believe that the future of private flying is dependent on these small aeroplanes which are cheap to fly and to hangar. The "new era" must cater for the aviation enthusiast who is rapidly finding himself priced out of flying.

In an age when space travel is within our grasp, let us not be oblivious to the needs of the private flyer; the greater majority of the "missile" manufacturers certainly are.

What a far-sighted gesture it would be if at the S.B.A.C. Show next year we had a fly-past of Druine Turbulents, Luton Minors, Currie Wots and Garland-Bianchi Linnets—all at Mach 0.1.

Hertford. RICHARD AMESBURY.

Squadron Operational Record ?

NEXT February 656 Squadron, Army Air Corps, will log the completion of 150,000 hours of operational flying. This, we believe, will almost certainly constitute a world record for any comparable squadron over a similar period of time and it is possible that it is an all-time high for any Service squadron.

I should be interested to know, through your columns, if any readers are able to confirm or refute this claim.

For the record, the hours are reckoned from July 1948, when 656 Squadron started flying in support of the emergency operations in Malaya. All the flying has been done in Austers Mks 5, 6, 7 and 9.

Seremban, Malaya. P. D. O'DRISCOLL (Major).

Speed and the Airline Passenger

ONE of the most interesting aspects of an airline pilot's job is the opportunity one gets to talk to passengers. Not unnaturally, the favourite topic is air travel, past, present and future; and time and time again I have heard the same views expressed. It seems that the more experienced the traveller the more likely he (or she) is to hold the opinion that air travel is no longer a pleasure. On almost every flight, one passenger at least will say, "Of course, the finest way to fly was in the old flying-boats." They speak nostalgically of the Mediterranean coastline, sunset on the Nile, herds of wild-life in Africa, etc., as though these sights no longer exist. And, indeed, for the passenger in 1958 they do not! Air travel has become a colossal bore; the chief virtue of the jet liners is that one will only be bored for two-thirds of the previous time. But who wants to be bored at all?

It is my belief that the airlines of the world have somewhere taken the wrong turning. Very, very few passengers want speed above all else. The high-powered business executive to whom minutes saved in travelling are vitally important, is, I am sure, a mythical figure.

The reason that the fastest aircraft is usually the most popular is simply explained. If one is to be sealed up in a metal tube with nothing to be seen from the small windows provided, then the less time this has to be endured the better. But air travel could be the most wonderfully interesting of all forms of transport, once this adolescent craze for speed at all costs has been outgrown. For every passenger in a real hurry, there are fifty who would like to see where they are going, to study the ever-changing view of the country over which they are flying; the forests, roads, rivers, the traffic-thronged streets of cities, all seen from the finest vantage-point imaginable, an aircraft at 3,000ft. Who wouldn't remember for a lifetime a flight from, say, Johannesburg to London at that height?

Ah, some will be saying, what about bad weather? All right, over Europe, for instance, such flying would often be impossible; one would then climb to a safe altitude and fly on airways as at present. I envisage these scenic flights as being routed over the low ground so one would not have to climb above, say, 10,000ft. But what about the economics of the operation? I think it could prove profitable. First of all, no airliner at present in use would be suitable. What is required is a roomy fuselage with large windows along each side, and at the *front*. A high wing is essential, of course. A very slight amount of pressurization would be desirable, sufficient to maintain the cabin at 5,000ft when the aircraft is at 10,000ft. This would also be sufficient to enable a reasonably rapid rate of climb and descent to be achieved without passenger discomfort. The pilots would have to be above the cabin in order not to obstruct the view for the passengers. This "scenic service" would normally fly from, say, 8 a.m. to 4 p.m. each day, so a cold lunch whilst airborne would be adequate—reducing galley size and number of cabin attendants to two. No bar need be carried.

The aircraft would need fuel for about 12 hours' flying at about 200 kt at 5,000ft—with four piston-engines, say 25,000 lb of fuel. (It begins to look as though a piston-engined variant of the A.W. Argosy might fill the bill.) With such an aircraft, possibly the front five or six rows of seats could be arranged to slope downwards slightly, as in a cinema, to improve the view for those not in the front row. In the rear fuselage, the aisle seats could be a few inches higher than the window seats to improve sideways viewing, possibly with a large window at the rear, surrounding a small lounge.

Such an aircraft, especially if based on an existing design, would be comparatively cheap to build and would have a long life—for what would cause it to become obsolete? Provided that it is kept simple, it should be cheap to operate.

Annual utilization might be low compared with the figures being achieved now and with the even higher figures aimed at in future; but high utilization is vitally important only when dealing with aircraft of high first cost and short working life. The type of aircraft envisaged here would have 15 to 20 years in which to pay for itself, so 2,000 hours per annum would be quite reasonable.

Crew utilization could be good. Since the aircraft would fly for only about eight hours a day, one crew could take it all the way, eliminating the expensive slip-crew system at present used.

The cost of passengers' hotel accommodation, meals on the ground, etc., could be paid for separately from the fare, enabling the fare to be kept low. Passengers might prefer to arrange their own accommodation at many places, and why not?

Of course, high-speed trunk-route services would still have their place for those who needed them. Also, trans-ocean routes should be flown high and fast, since there is nothing to see anyway (indeed, the best way to fly the Atlantic is while sleeping).

To conclude, I believe that not only would this interesting, leisurely type of service be popular with many of the present air travellers, but a whole new market would be tapped. The vast numbers of people who enjoy travel for its own sake, who now fill the Continental coach tours and cruise liners, would all be potential customers. The possibilities are immense. Winter air-cruises of the Mediterranean, for example; or, on a smaller scale, day trips around the Western Isles and over the Highlands of Scotland in summer, and so on. Give the passengers what they want at the right price and success is assured.

Anyway, before we in the air transport business commit any more millions to satisfy a largely imaginary demand for speed, let us ask ourselves where we are going—and why.

London, N.4. J. R. HOWARD.

Commemorating the R.34

HERE is a simple solution to the apparently contentious problem of commemorating the R.34's double Atlantic crossing. The memorial should take the form of a scale model of the airship, to be suspended from a ceiling in one of the terminal buildings at London Airport. Nearby, on a wall, there should be a plaque commemorating the airship's achievement.

I believe that a plaque has recently been unveiled at Roosevelt Field, New York, to record the R.34's arrival there. The model at L.A.P., looking as if in flight, would serve to show present and future generations how beautiful and graceful were the British airships of the inter-war years.

London, N.W.3. PAUL HUMPHREYS.

Satellite Launching

I BELIEVE it is true to say that, during the recent discussion on the possibility of launching a British artificial Earth-satellite, no one has publicly mentioned the possibility of launching such a vehicle from a V-bomber or balloon.

The results obtained from Rockoon and Rockair(e) firings in the U.S.A. suggest that such a method would enable a worthwhile satellite to be placed in orbit. It appears to me that a Black Knight could be fitted with a second stage and carried beneath a Vulcan; this would enable a launching to be carried out at 50,000-55,000ft as part of a toss-bombing manœuvre after a preliminary dive from maximum altitude. Since the launch would take place above a large part of the atmosphere the payload could

CORRESPONDENCE . . .

probably be considerably greater than in a ground launching.

A balloon launch would confer similar advantages, but could it be so well controlled?

Other advantages, in either case, would be that launching sites would not be confined to large rocket ranges such as Woomera; indeed, an air launch could take place over the Atlantic in any desired direction, and transportation costs to Australia would be saved. A balloon launch could take place from anywhere that could be reached by air or ground vehicles carrying the rocket.

I shall be interested to see the comments of other readers.

Kingston-upon-Thames, Surrey. M. H. HARRIES.

[Air launching is of great assistance to any such vehicle; but no present balloon, nor a V-bomber, could lift the type of rocket system needed to place a really worthwhile load in an orbit.—Ed.]

Austrian Air-victory Scores

I WAS interested in Mr. R. Bowyer's letter (November 28). However, for Brumowski and Linke-Crawford I have been told different scores by Herr Friedrich Hirt of the Aeroclub of Austria. In his book *The Aces*, Mr. John R. Sharp also gives different scores for Linke-Crawford.

The following list may be of interest. The main figures are those given by the Aeroclub of Austria, which also holds a further list of 20 names of pilots with between nine and four victories. In parentheses are the scores quoted in Mr. Sharp's book:

Hptm. Godwin Brümowski, 40 (35) (other sources quote 34 to 36; before W.W. 2 was active in Austrian Air Force; killed as a passenger near Schiphol, 1937); Offstell. Julius Arigi, 32 (26) (Dr. Wolfram Lenotti, in his book *Rot Weiss Rot*, quotes 29; Arigi was alive in Austria in 1957); Oblt. Frank Linke-Crawford, 30 (27), killed in combat, June 1918; Oblt. Benno Fiala R. von Fernbrugg, 29 (27), alive in Vienna 1957.

Lt. Josef Kiss, 19 (19); Lt.d.Res. Franz Gräser, 16 (15); Zugf. Eugen Bönsch, 15 (11); Feldw. Stefan Fejes, 15 (18); Offstel. Kurt Gruber, 14 (10); Oblt. Ernst Stohschneider, 14; Hptm. Raoul Stojsavljevic, 12; Lt. Franz Rudorfer, 10; Hptm. Adolf Heyrovsky, 10 (12); Oblt. Friedrich Navratil, 10 (10); Hptm. Josef von Meier, 10.

JEAN-PIERRE FIDELLE.
Paris 20e. (Member of Aero Club de France)

It's an Ill Noise-level . . .

RECENTLY I have noticed numerous complaints about the noise-level of the Boeing 707. I would like to register my own complaint—not about this marvellous piece of American engineering, but about its many British critics. It is a pleasant change, in these days of "Whispering Giants," to have an airliner serving Britain that lets everyone know of its presence. I hope that Boeing will never do anything so rash as to sacrifice the 707's performance by cutting down its noise-level.

R. N. COOK.
London, S.E.2. (Cotton-wool salesman.)

IRBM PRODUCTION

RECENT testimony in Washington has suggested that production of both the Thor and Jupiter intermediate-range ballistic missiles may cease when present contracts are fulfilled at the end of this year. There are two reasons: the success of the ICBM Atlas has made the IRBMs "less interesting" to the U.S.A.F. Strategic Air Command, and only one nation (the United Kingdom) has agreed to the establishment on its soil of IRBM bases. Discussions are continuing with the Italian Government with a view to the installation of three U.S.A.F. squadrons of Jupiters (45 missiles) in Italy.

On December 19 Maj-Gen. David Wade, of the U.S.A.F. Strategic Air Command, confirmed that the Thor weapon system was ready for combat. Three days earlier, two Thors were fired within a few hours of each other. The first was a test firing at Cape Canaveral (the 22nd to be launched there); the other was the first all-S.A.C. firing at Vandenberg A.F.B., over the Pacific. Both rounds went the full chosen range and impacted within five miles of the selected point (close enough, it was suggested, if they had been carrying warheads).

As described in a feature article in our December 5 issue, R.A.F. Bomber Command are to operate four squadrons of Thor IRBMs, totalling 60 missiles. The build-up of these bases is being facilitated by an airlift from the Douglas plant at Long Beach, Calif.

EXPERTS TALKING

AT the December forum of the Aircraft Recognition Society, held in London on December 17, an eminent quartet of industry and airline men answered a mixed set of prepared questions from A.R.S. members. The panel comprised Sir Arnold Hall, Mr. Peter Masefield, Mr. R. L. Lickley and Mr. Peter W. Brooks, and the questions were put by the chairman of the Society, Mr. E. G. A. Wilton.

The most interesting answers of the evening came when the experts were asked to list "the biggest mistakes in the history of aviation." Among the suggestions put forward were the effort to build large aircraft (in particular, airships) before sufficient technical knowledge was available; neglect of the flying-boat; encouragement of the flying-boat; development of the biplane; the airlines' current emphasis on speed; British airlines' pre-war lack of interest in speed; and the absence of any real attempt to sell air transport to the masses.

On these and a variety of other subjects, the speakers gave their audience sound value. From time to time they were bluntly critical of particular projects and companies, apparently quite safe under the chairman's assertion that what they said at the meeting was confidential. Exactly how a meeting open to non-members of the Society could be considered confidential was not explained.

TARGET AIRCRAFT (contd. from p. 47)

them. The telemeter system sending aircraft behaviour information back to the master controller was considered essential.

Problems of the future included that of providing a low-flying target and a supersonic target. In the first case a run below about 300ft at 450 to 500 kt would be needed and would have to be made over flat ground since contour-flying would be too difficult. The radio link and radar plotting would be ineffective and it seemed likely that the drone would stand off at a convenient height before making a low-level target run controlled either by a preset programme or by visual sighting. There would be safety problems in allowing a high-speed target to fly unmanned at low level close to the missile site.

For the supersonic requirement it was obviously out of the question to build an aircraft for this specific purpose. A rocket- or ramjet-propelled machine similar to the Lockheed Q5 would be required and Mr. Conway suggested an adaptation of a Research Test Vehicle, air-launched at 40,000ft and making a target run at Mach 2 well above 60,000ft for about 3 min. (The diagrams on p. 47 illustrate some of the parameters involved.)

In conclusion Mr. Conway said that the target was too often the last item in the missile-development programme because it was considered by many to be unproductive. Automatic control and landing systems developed for drones could well be applied to manned military or passenger aircraft. The present complement of British drones would have to be supplemented with other aircraft and some sort of supersonic machine and, later, with a target missile as opposed to a target aircraft. Mr. Conway acknowledged the indebtedness of the British target system to R.A.E. Farnborough and to Australian engineers and R.A.A.F. officers attached to his company. Credit for the Canberra U.10 itself rested with the Short engineering team responsible for it.

FORTHCOMING EVENTS

Jan.	3.	British Interplanetary Society: "Rocket Combustion Research with Liquid Propellant Engines," by Dennis S. Carton.
Jan.	6.	R.Ae.S.: Young People's Lecture: "Rocket Flight in Space," by Dr. L. R. Shepherd.
Jan.	8.	R.Ae.S.: "Safety in Mechanisms," by Raoul Hafner.
Jan.	13.	R.Ae.S.: "Stress Corrosion—the Engineer's View," by P. H. Wall.
Jan.	15.	British Institution of Radio Engineers (Scottish Section): "Satellite Development and the Moon Rocket," by P. H. Tanner (at Glasgow; repeated on Jan. 16 at Edinburgh).
Jan.	15.	R.Ae.S.: Presidential Address.
Jan.	16.	Institute of Navigation: "Blind Landing Problems," by W. J. Charnley.
Jan.	17.	Aircraft Recognition Society: All-England Contest.
Jan.	21.	Manchester Metallurgical Society (Institute of Metals): "Investigation of Metallurgical Failures in Aircraft," by D. A. Ryder.
Jan.	26-29.	Institute of the Aeronautical Sciences: 27th Annual Meeting.
Jan.	27.	R.Ae.S.: "The Noise Problem in Relation to Engine Design," by P. Lloyd.
Feb.	5.	R.Ae.S.: First Halford Memorial Lecture, by J. L. P. Brodie (at Hatfield Branch).
Feb.	6.	Helicopter Association: "Some Engineering Aspects of Helicopter Assessment Trials," by H. J. Webb.
Feb.	7.	British Interplanetary Society: "High-energy Fuels and Rocket Propulsion," by Dr. F. Fitzgerald.
Feb.	9.	R.Ae.S. Guided Flight Section: "Theoretical Studies of Guided-missile Control Systems," by E. G. C. Burt.

R.Ae.S. Branch Fixtures (to Jan. 9): Jan. 5, *Derby*, a.g.m. Jan. 6, *London Airport*, film show; *Luton*, "Flight Testing of Modern Prototype Aircraft," by C. F. Bethwaite. Jan. 7, *Bristol*, brains trust; *Brough*, "Tyne Turbo-propeller Engine," by D. McLean; *Hatfield*, social evening; *Reading*, "Interplanetary Flight," by J. E. Simpson; *Southampton*, "Modern Aircraft Maintenance Procedure and Techniques," by A. G. Nunn; *Weybridge*, brains trust. Jan. 8, *Cheltenham*, "Guidance and Control," by L. H. Bedford; *Isle of Wight*, "Work of an Air Correspondent," by Angus Macpherson; *Swindon*, "Test Flying," by L. R. Colquhoun, and a.g.m. Jan. 9, *Preston*, annual dinner dance.

[redacted]